

Railway Age

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RAILWAY AGE

What Can Railroads Do to Promote National Prosperity?

The restoration of equilibrium in the national economic life—which would permit production and consumption of goods *per capita* to return to, or surpass, the level attained in 1929—is a concern of railway management fully equal in importance to the securing for the railways of their fair share of traffic. As was pointed out in our January 6 issue (page 4), if the railroads should continue to secure only their present reduced share of the total national freight traffic, and it should increase to what it was *per capita* in 1926, the railroads would have just about as much traffic as they had in 1926 and 1929.

Promoting National Prosperity a Proper Concern of Railroad Managements

In calling attention to this approach to a solution of the difficulties which face the railways, we do not intimate that an equitable solution of their competitive troubles should be neglected or postponed. Indeed, irrational competitive conditions in the field of transportation are one of the strongest forces perpetuating a lack of balance in the entire economic system. It follows that efforts made by the railroads to restore transportation competition to a rational economic basis not only serve their self-interest, but are also a contribution toward the return of health throughout the entire economic system.

But there is much more economic unbalance which is perpetuating depression and poverty in this country than the irrational conditions obtaining in transportation. And these unbalancing factors are depriving the railroads of traffic and revenues (and railroad employees of jobs and railroad manufacturers of orders) just as surely as tax-aided competition is harming them. For railroad management to concern itself with all forces which determine economic equilibrium, or lack of it, therefore, is as proper a function as is the routine operation of the railroads; because management is hired, not merely to operate the railroads efficiently but, if possible, to operate them profitably.

It is, then, a duty of railroad management—over and above the day-by-day operation of the railroads—not only to defend railroad traffic from competition which is economically unjustifiable, but to see to it that all policies of the railroad industry are such as to promote economic equilibrium—and hence to contribute to the restoration of general prosperity. Depression has persisted so long because so many interests have given little thought to the economic condition of the nation as a whole and have concerned themselves almost solely with their immediate self-interest. They are like a dozen fellows in a boat, each of whom uses an oar as if he were alone and then wonders why the boat doesn't get anywhere.

The Conditions Prohibiting Recovery

The conditions necessary to the restoration of economic equilibrium (and hence prosperity) are generally known and agreed to by all competent economists. Some of the more important conditions making for instability and the continuance of depression are succinctly summarized in the January bulletin of the National City Bank of New York as follows:

1. Lack of harmony in industrial relations.
2. Unwillingness of people with money to invest it.
3. The placing of burdens on industry more rapidly than it can absorb them without increasing costs.
4. Prices of industrial products out of line with those of agricultural products.

These conditions which are keeping the country poor (and depriving the railroads of traffic which they might otherwise enjoy) are not going to be corrected unless individuals and groups who are in a position to contribute to their correction will actually exert themselves to do so. Taking the above four points in order, let us examine them briefly to see what, if any, contribution the railroad industry might make toward solution of the problems they present.

Lack of Harmony in Industrial Relations.—Here, superficially, it would appear there is little the railroads

could do that they have not done. Some believe that the harmony the railroads have achieved has been purchased too dearly. Nevertheless, they have not had the stoppages of work from which almost all other industries have suffered—although it should be recognized that the National Adjustment Board set-up fosters disputes to a greater degree than it settles them.

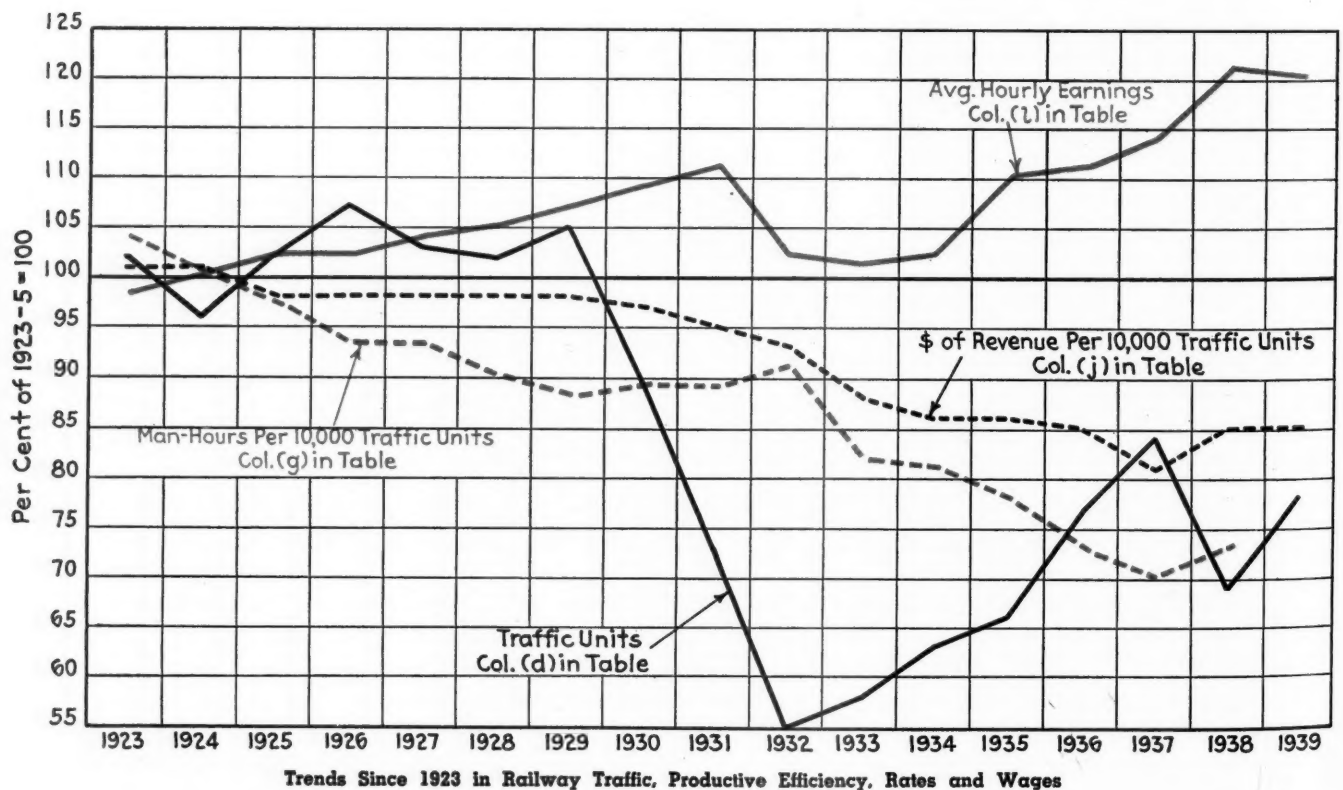
Unwillingness of Investors to Invest.—Most railway managements are doing all that lies in their power (directly at least) to defend the holdings of their investors. Nevertheless, the criticism has been made that some railroad managements are concerned more with the "prestige" of their properties as historic institutions than with earning a dollar for the stockholders. Made in regard to the average railroad management, such a statement would be untrue. Nevertheless the "prestige" of a railroad is a force to be reckoned with—sometimes a force of great morale-building value, and sometimes a force destructive of the interests of the industry. Whether it is rated higher than the legitimate claims of investors in the property is a question which, from time to time, managers might well ask themselves.

In calling attention to the unwillingness of investors to invest, the National City Bank bulletin mentioned in particular the tax laws which weigh heavily against big investors. In this connection might be mentioned also tax-exemption for government bonds. Such exemption is doubly harmful to the railroads, because it not only encourages investment in such securities rather than in railroad securities; but a large part of the money invested in tax exempt securities is used, directly or indirectly, to build highways and waterways in competition with the railroads.

One of the principal reasons why investors hesitate to put money into railroads is that such projects as the St. Lawrence Waterway, the Youngstown canal and 28,000 miles of new superhighways hang over the railroad industry like a sword of Damocles. It appears that one contribution railroad managers can make toward the restoration of national prosperity through reviving the interest of investors will be by (1) insisting in and out of season that tax-exemption for government securities be ended and (2) that some impartial body be set up by the federal government to pass upon the economic justification of all transportation projects proposed by government agencies in competition with the railroads.

Burdening Industry with Increased Costs.—This point is closely related to that regarding the unwillingness of investors to invest in the railroads and most other industries, because the piling up of costs almost always curtails current and prospective profits, which principally determine the willingness or unwillingness of investors to invest. In the accompanying chart it is shown that average hourly wages on the railroads in 1939 were 20 per cent higher than the average for the years 1923-1925, despite the fact that the cost of living was much lower last year than 16 years ago, and average revenue per ton-mile was 12 per cent lower and average revenue per passenger-mile 40 per cent lower. The relative burden of taxation also has mounted constantly year by year. In 1939 taxes were almost the same as in 1927—but gross revenues with which to pay them were almost one-third less.

Despite increased wage and tax costs and declining rates the railroads have constantly increased their ef-



iciency and improved their service to the public. But this process cannot be long continued in the face of such obstacles; and it is clearly the duty of railroad management (not only because of its direct responsibility, but in consideration of the welfare of the nation as a whole) to resist in every way it can all increases in the cost of railroad service; and likewise to improve methods and materials in every way it can in order to reduce costs.

Prices of Industrial and Agricultural Goods Out of Line.—The National City Bank bulletin presents a table comparing general commodity prices with farm prices—1913 and 1939. Last year agricultural prices

agricultural products. Nevertheless, every economy which they can effect to reduce the cost of transportation to its users, especially the farmers, is a contribution toward this desirable goal—just as every unwarranted increase in the cost of transportation serves to aggravate the problem and delay still further the restoration of a balance between farm and factory price levels, which is necessary to a restoration of prosperity.

In an accompanying chart and table we trace the comparative trends in the volume of railroad traffic, in the efficiency with which the traffic is handled, in the cost of railroad service to the users of it and in hourly railroad wages. The years 1923-1925 are taken as 100

Railway Traffic, Productive Efficiency, Rate and Wage Trends Since 1923

	(a) Revenue Ton-Miles (Millions)	(b) Revenue Pass.-Miles (Millions)	(c) Traffic Units (1) (Millions)	(d) Traffic Units % of 1923 -25=100	(e) Hours Paid for (Millions)	(f) Hours per 10,000 Traffic Units (2)	(g) Hrs. per 10,000 Traffic Units % of 1923 -25=100	(h) Operating Revenues \$ (Millions)	(i) \$ from Custom- ers per 10,000 Traffic Units (3)	(j) \$ from Custom- ers per 10,000 Traffic Units % of 1923 -25=100	(k) Average Hourly Wage (4) (cents)	(l) Hourly Wage % of 1923 -25=100
1923	412,727	37,956	526,595	102	4,928	94	103	6,289	119	101	61.0	98
1924	388,415	36,090	496,685	96	4,534	91	100	5,921	119	101	62.3	100
1925	413,814	35,950	521,664	102	4,531	87	97	6,122	117	98	63.1	102
1926	443,746	35,477	550,177	107	4,671	85	93	6,382	116	98	63.1	102
1927	428,736	33,649	529,683	103	4,519	85	93	6,136	116	98	64.4	104
1928	432,915	31,601	527,718	102	4,313	82	90	6,111	116	98	65.5	105
1929	447,321	31,074	540,543	105	4,346	80	88	6,279	116	98	66.6	107
1930	383,449	26,814	463,891	90	3,759	81	89	5,281	114	97	67.8	109
1931	309,224	21,894	374,906	73	3,039	81	89	4,188	112	95	68.9	111
1932	233,977	16,971	284,890	55	2,378	83	91	3,126	110	93	63.6	102
1933	249,223	16,340	298,243	58	2,233	75	82	3,095	104	88	62.9	101
1934	268,710	18,033	322,809	63	2,393	74	81	3,271	101	86	63.5	102
1935	282,036	18,475	337,461	66	2,397	71	78	3,451	102	86	68.6	110
1936	339,245	22,421	406,508	79	2,675	66	73	4,052	100	85	69.1	111
1937	360,620	24,655	434,585	84	2,799	64	70	4,166	96	81	70.9	114
1938	290,084	21,628	354,968	69	2,329	66	73	3,565	100	85	75.0	121
1939(5)	332,500	22,900	401,200	78	....	..	..	4,010	100	85	74.7	120

(1) Col. (a) + 3 × Col. (b).

(2) Col. (e) ÷ Col. (c).

(3) Col. (k) ÷ Col. (c).

(4) These figures understate actual hourly earnings, in that many employees, especially in train and engine service, are paid for a growing percentage of hours not actually worked.

(5) 1939 figures are estimated.

were 12 per cent below the level of 1913 and general commodity prices were 8 per cent above it. Naturally, under such price conditions, farmers have not been able to buy other commodities in the same ratio that they did in 1913—hence the depression and unemployment among the producers of other commodities. But the most startling disclosure of the indices, taken from official sources and published in this bank bulletin, is that the hourly wage rate in industry in 1939 was 175 per cent higher than in 1913. The farmer with the products of his labor 12 per cent lower than in 1913 came into the market to buy the products of industrial labor which was paid 175 per cent more per hour than in 1913! Is it any wonder that the farmer found it impossible to buy his share of industrial products, and that consequently, a great deal of unemployment existed in the factories which make goods, and on the railroads which transport them—or any wonder that profits in industry discouraged investment?

Cost Reduction Railroads' First Public Duty

Railroad managements can do very little directly to reduce the spread between the prices of industrial and

per cent, and the curves trace the departures from that mean which have occurred in subsequent years. It is particularly worth noting that man-hours per 10,000 traffic units (both freight and passenger) have declined 27 per cent since the 1923-1925 period, indicating that *technologically the railroads are making a mighty contribution to an increasing standard of living in this country.* It is to be noted, however, that the charges to patrons, while they have declined, have not declined as greatly as the saving in man-hours (15 per cent in charges, compared to 27 per cent in man-hours) per unit of service rendered. The failure of rates to decline in proportion as efficiency has increased is principally explained by the curve of hourly wage rates (20 per cent higher now than in 1923-25).

The data given herein on the railroad industry are only a part of the evidence which might be adduced bearing upon the question of the extent to which the industry is doing or failing to do what it might to promote general economic equilibrium. In a general way, though, it may be said that any steps the railroads can take to *reduce their costs of operation, passing such savings along to shippers in those cases where rate reductions will attract traffic not now moving by rail,* are

the kind of contribution which is most needed from the railroad industry for the promotion of national recovery. Conversely, resistance to all increases in costs whatsoever—from whatever source they may arise—are needed if the railroad industry is to play its full part in the restoration of national prosperity.

It is appropriate that an industry such as the railroads, whose future depends upon the extent to which business men and public men are aroused to a consideration of the public interest in the transportation situation, should itself lead the way in demonstrating such public spirit. It so happens that most of the policies the railroads are now following are definitely constructive from the standpoint of the public interest. To that extent, the railroads need only recognize and call attention to the fact, in order to make their example effective. But there are some important sectors in which railroad policy might be more directly aimed at the general welfare than at some other objectives—the supposed welfare of individual railroads, for example—and so to aim it, with appropriate publicity, would provide an example to some segments of business that stand very badly in need of such an example.

Vast Construction Awaits Adequate Funds

The railways' substantial purchases of new cars and locomotives in the last few months have attracted widespread national attention. The economies which may be effected through consolidations have also received much general discussion. The third factor, however, leading toward increased efficiency and economy of operation—improvement in the railways' fixed properties—has not been given such public consideration. Yet this third factor has been largely responsible for the advances in efficiency made in the past and affords the best opportunity for similar advances in the future.

The railways today have need of and stand ready to make extensive improvements in their fixed properties, but it is obvious that without adequate earnings they cannot finance such improvements out of earnings, or by borrowing or the sale of stock. That earnings are the key to spending on the railways is only too evident from the fact that they spent approximately 2¾ billion dollars less for improvements to their fixed properties in the nine years 1931 to 1939 than they spent in the

Would Mechanical Refrigeration Hold Traffic?

There appears daily new evidence that the railroads stand to lose a large part of their perishable traffic to trucks and boats, unless they can provide more economical refrigeration. As has been previously noted in these discussions, a large volume of perishables has already been lost because of what shippers regard as excessive costs of rail refrigeration; also, a corresponding volume of business is diverted when returning refrigerated trucks pick up "back-hauls."

It is usually conceded that the rates on perishables, as a general rule, are about as low as the railroads can afford, and most observers appear to believe that, if the carriers can devise dependable economical mechanical refrigeration, they will be able to hold their own in competing for this traffic.

But now comes the report that shippers are considering acquiring mechanically refrigerated truck equipment to move fresh fruits and vegetables all the way from the Pacific Coast to the Atlantic Seaboard, and use this equipment to haul other traffic on its way home. This may not prove to be a practical venture. Nevertheless, the radius in which this mechanically refrigerated equipment is now being operated is sufficiently threatening to railroad traffic, for the carriers to consider methods to overcome their disadvantage.

The cost of transportation of fruits and vegetables over long distances is a severe problem for shippers—and they are inclined to feel that they should not be further handicapped by methods of refrigeration which are more costly than the "state of the art" makes necessary. Even if the railroads were not threatened with this competition, anything they can do to decrease costs simply means that so much more traffic will be able

to move. Hence, it would appear to be in the selfish interest of the railroads to provide these shippers with the most economical facilities obtainable.

It is contended by some that mechanically refrigerated railroad freight equipment is impractical. In view of the great strides that have been made in mechanical refrigeration and air conditioning, this contention does not appear to be tenable. Mechanical refrigeration has been devised for trucks that will indefinitely hold temperature at sub-zero, or at any other temperature. Why isn't it just as practical similarly to refrigerate railroad equipment? Some contend it is impractical because a great part of the vegetables are "top iced," but why can't this problem be solved with humidity control? The green grocer at destination accomplishes the same purpose with liquefied humidity, and, in some instances, either knowingly or unknowingly, has produced similar results with less direct methods of humidifying.

Mechanical refrigeration of railroad freight equipment might, under present conditions, cost upward of \$1,500 per unit, but this could doubtless be reduced with mass production. Observation of freight movement under refrigeration supports the belief that a satisfactory return could be earned at much lower price for refrigeration than the actual present cost obtaining under the antiquated methods now employed.

More difficult technical problems than this have been solved by the railroads and other industries, and it would seem that the stake here is sufficiently great for the railroads to set their best minds to the problem. The remarkable job of passenger equipment air conditioning would indicate that the problem is not beyond railroad ingenuity and skill.

nine years 1922 to 1930, which latter years, on the whole, were years of substantial earnings.

In spite of the fact that the railways had been continuously building strength and reserve into their properties throughout the Twenties, they still had projects involving the expenditure of hundreds of millions of dollars under way or contemplated when the depression arrived, the major part of which had to be abandoned. Thus, many roads began the depression with a large backlog of work pressing for attention, which backlog has since been greatly increased through the effects of competition, improvements in operating methods, obsolescence and the demands for improved service and greater efficiency. As a result, at the present time, there are few roads that, with money available and reasonably good prospects for equitable treatment and reasonable earnings, would not undertake large improvements, which, in the aggregate, would involve the expenditure of several billion dollars.

Typical of at least one class of work for which there is still large need on the railways, and indicative of many other needs, is the line revision project which the Chicago, Rock Island & Pacific completed last fall in Southwestern Kansas, and which is described elsewhere in this issue. Although this project cost approximately \$1,500,000 and involved the construction of 8.4 miles of new line, it shortened the old line by 3.6 miles, eliminated 106 ft. of rise and fall and 353 deg. of

curvature, and, together with three minor grade revision projects on the same line, permitted the tonnage rating to be increased from 3400 and 3880 tons to more than 5,000 tons over a territory 375 miles long. This improvement eliminated a considerable amount of helper service, and, on the basis of 1937 traffic, approximately 21,000 train miles annually—through avoiding the necessity for reducing tonnage in two to get trains over certain engine districts. Furthermore, the project eliminated one of the most hazardous river crossings on the railway, while the abandonment of the bridge effects an annual saving of \$3,800 in extraordinary maintenance charges, to which can be added a saving of approximately \$7,100 annually in track maintenance through the reduction in track mileage.

That there are hundreds of improvement projects being held in abeyance by the railways is known to every railway man. As the result of the pick-up in railway earnings during 1939, and the prospect of at least an equal volume of traffic during 1940, it is to be expected that the volume of construction activity will rise considerably during the present year. It is equally certain, however, that until the net earnings of the railways are restored to a level sufficiently high to enable them to re-establish their credit, many of the larger projects, involving in the aggregate hundreds of millions of dollars, will be held in abeyance, to the continued disadvantage of both the railways and the public.

Railroads Must Be Made Safe for Capital

"In their attitude toward a railroad, people are much like the blind men with the elephant: they are prone to identify the thing by the attribute which happens to come to their direct attention. For example, all users of railroads suppose that a railroad exists to provide service for the benefit of its patrons; labor considers that a railroad's prime importance is to furnish employment; farmers, merchants and manufacturers think of a railroad as a creator of purchasing power; and state and local governments regard it as their principal taxpayer.

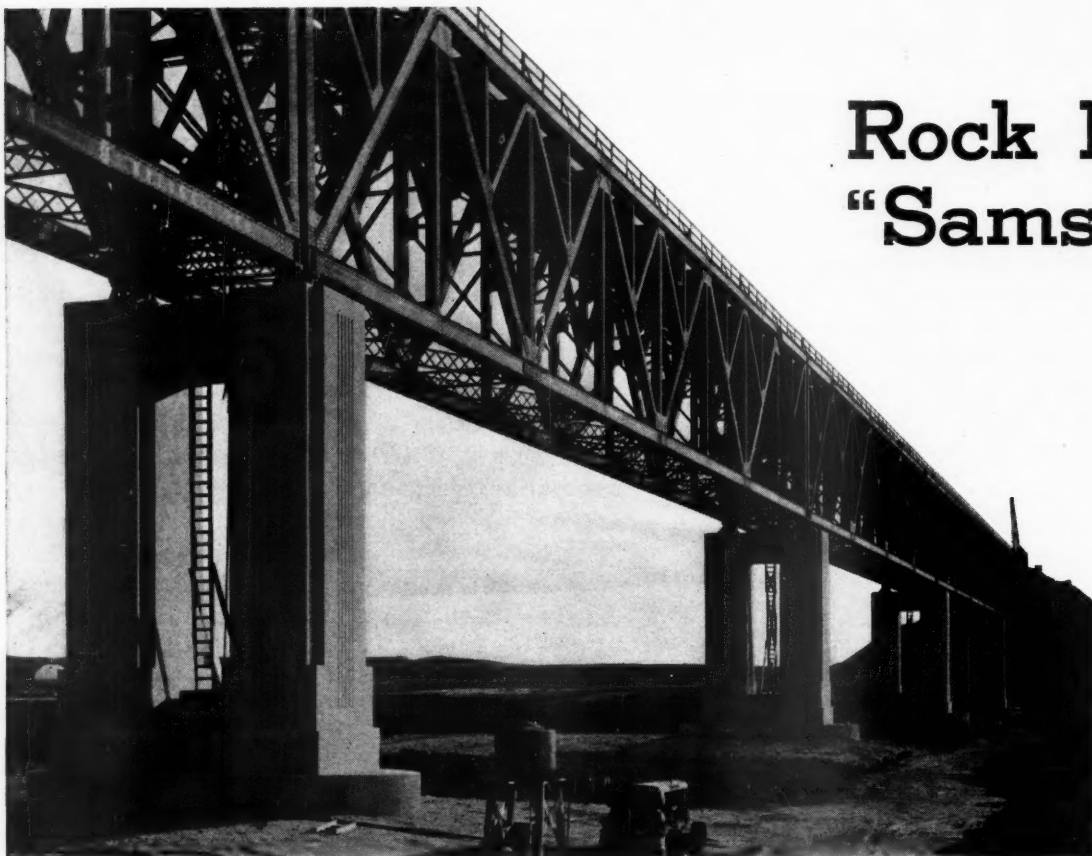
"In the midst of this welter of confusing concepts it should not be overlooked that originally the chief motive for the creation of a railroad was to obtain a satisfactory return on capital investment. Today the railroads are to a substantial degree providing adequate transportation for patrons, employment for the benefit of workers, purchasing power for the benefit of sellers, and taxes for the benefit of state and local governments but, with few exceptions, they are *not* fulfilling their original purpose—that is they are *not* providing an adequate return for their capital investors. . . .

"Although a railroad is created by capital investment, the latter is made possible by credit which in turn depends upon earning power. Hence, the status of railroad earning power is at the very root of the railroad problem today. Of course, the painless remedy for a sore railroad earning situation is the liberal application of a curative ointment called

traffic. For many years everyone connected with railroads—labor, management and the public—hoped that increased traffic would descend out of the blue like the gentle rain from heaven and would obviate the necessity of reluctant concessions on their part. But recently railroads have become aggressive with respect to traffic improvement and instead of expecting traffic to just grow, like Topsy, have at last realized that such growth should be accelerated by affirmative steps in the direction of service improvements and rate adjustments. . . .

"It is a safe assertion that the present facilities of American railroads are being utilized now as effectively as is possible within the limitations of the intensive competitive situation which prevails through the industry. Still there is a vast opportunity and a great need for continued improvement of the quality of railroad service, for the reduction of its cost, and for a greater stability in the return on capital investment. This objective can be obtained not alone by advanced planning and supervision within the potentialities of existing facilities but *by the investment of new capital for modernization*. In short, although the future development of American railroads will take the physical form of new and improved facilities, basically the problem is not only one of technical advance but one of financial revitalization. Technical progress is absolutely impossible if capital cannot be attracted to make it effective. . . ."

From an Address by Emil Schram, Chairman, R. F. C. to the St. Paul Transportation Club, January 22.



Rock Island "Samson of

The New Five-Span,
High Level Crossing
of the Cimarron River
Is 1,269 Ft. Long

ONE of the largest and most interesting pieces of railway construction completed in the United States during the last year was the Arkalon cut-off on the Chicago-California main line of the Chicago, Rock Island & Pacific, immediately east of Liberal, Kan., this project involving the construction of 8.42 miles of new line on fill sections up to 95 ft. high, approximately 3,000,000 cu. yd. of grading, and the building of a new five-span, high-level bridge, 1,269 ft. long, across the valley of the Cimarron river. The planning and execution of this project involved both new and novel applications in railway engineering and construction, and an unusually high degree of co-ordination between the interests of those in charge of line maintenance and operation.

The project was completed well within the time originally specified and within the funds allowed, and the work was so conducted that it has resulted in the reduction, and in some cases apparent elimination, of a number of the maintenance and operating costs which customarily follow similar work. This is the best evidence of the economic justification for the careful planning, timing, and extensive research which characterized this project throughout. In spite of the special engineering studies involved in this project, it is of interest to note that the charges to the engineering account were well below those allowed customarily for work of this character.

River Presented Severe Problem

The Arkalon cut-off replaces a 12-mile section of line which meandered into the deep Cimarron valley between Kismet, Kan., and Hayne, on alternate cuts and fills which averaged from 12 to 15 ft. high and varied from 200 to 1200 ft. in length. This old alignment included 400 deg. of 2 to 3-deg. curvature, and involved 0.8 per

cent grades in the descent to the river, where the crossing was made on two low pile trestles aggregating 1300 ft. in length, at a level approximately 15 ft. above the stream bed.

These physical features of the old valley line presented a severe handicap to efficient operation, especially as the long 0.8 per cent grades against eastbound movements made helper service or the splitting of trains necessary for all tonnage trains. However, of an even more serious nature, was the hazard to train operation involved in the low-level river crossing, where frequent and costly washouts, as well as heavy recurring charges for protective works, had long been experienced.

The Cimarron river is 600 miles long and drains an area of 18,000 sq. mi. Its fall is very rapid, especially in the upper reaches, varying from 32 ft. per mile at the source to 10.8 ft. per mile at the Rock Island crossing. The banks of the stream in the latter vicinity are low and, being composed of fine loam underlaid with sand, permit rapid cutting and shifting of the channel in times of flood, while the river bed, composed of sand, becomes saturated to such an extent that it loses its stability and bearing power to a considerable depth.

The valley of the Cimarron is visited frequently by storms of cloudburst intensity, which cause devastating floods. The rate of travel of major flood waters in the section above the Rock Island crossing is as high as 200 miles a day. As a result, this river is an unusually difficult stream to control, and, over a period of years, large sums have been expended by the Rock Island for bank protection, channel changes and various other expedients in a single-handed attempt to overcome the recurring interruptions to train operation.

Confronted with these conditions, the railroad's position was constantly threatened, which, together with the economic disadvantages to operation over the existing alignment, were the principal factors in the selection of

Completes Its the Cimarron"

Eight-mile cut-off, involving three-tier fills and a 1269-ft. river bridge, saves 3.6 miles of distance and materially improves operating conditions—Speed marked construction

this section of line for improvement. In the latter part of 1937 extensive resurveys and comprehensive studies of the river and its environs were undertaken by the railroad's engineers in collaboration with specialists on geological features, soil erosion, stream flow, etc., including the assistance of the staff and research facilities of the hydraulic laboratories at the Iowa State University, Iowa City, Ia., under the direction of Professor E. W. Lane.

The final result of these studies proved beyond reasonable doubt that, except as an emergency, the costs to control the Cimarron river for even a reasonable distance from the existing location of the railway, could not be justified economically unless general benefits, which would be in the public interest, could be secured and a portion of the cost assumed by federal, state or other public agencies. As is so often the case where the railways are involved, no help was forthcoming, so a new



Fast-Moving Motor Trucks Proved Highly Effective on the Long Hauls

crossing location was sought that would be to the best interests of the Rock Island, and still be within reasonable cost.

Marked Operating Improvement on New Line

As a result of this search, a new alignment was found which met all of the necessary requirements. The new cut-off line, 8.42 miles in length, leaves the old line at Kismet, extends southwest directly across the river valley, and rejoins the old line near Hayne. It is tangent throughout its length except for 7,706 ft. of 20-min. curvature at its extreme east end and 4,380 ft. of 30-min. curvature at its extreme west end. This alignment,

Graders, Pulled by Tractors, Did an Effective Job of Bank Shaping



which crosses the river approximately two miles downstream from the old line crossing, is 3.57 miles shorter than the old line and eliminates approximately 353 deg. of curvature and 106 ft. of rise and fall.

The grades adopted for the line were based on a number of considerations and studies. For eastbound traffic, the establishment of a 0.5 per cent ruling grade at this location, together with minor grade reductions at three other points, now completed or under construction, provide a continuous line of not exceeding 0.5 per cent ruling grade all the way from Dalhart, Tex., to Trenton, Mo., a distance of 620 miles. Westbound, a maximum grade of 0.8 per cent was established, which corresponds with the westward ruling grade at other points on the division.

Meeting these requirements, together with the direct alinement of the new line, led of necessity to an unusually high grade line at the river crossing. This was a disadvantage from the standpoint of construction economy, and it was apparent that any lowering of the grade line at the river crossing would produce substantial reductions in the embankment quantities required, as well as in the cost of the bridge structure.

In studies made to permit the lowering of the crossing somewhat, it was found possible to use a momentum grade to good advantage. A comparison was made of the methods available for computing the maximum length of momentum grade applicable to the 0.5 per cent grade east of the river, without decreasing its tonnage

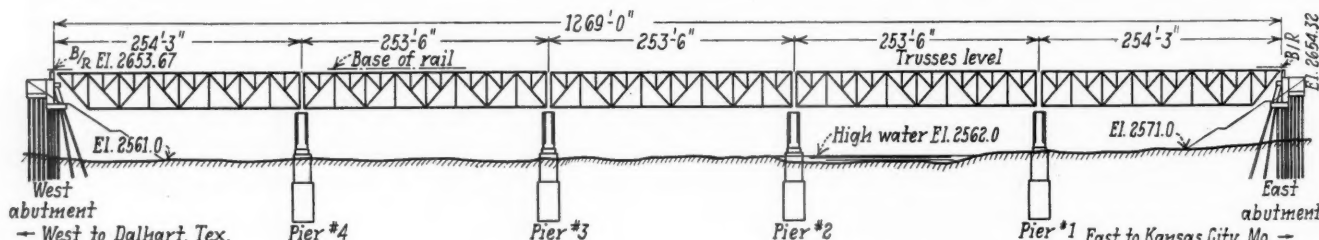
particularly with respect to the reduction of speed on the momentum grade, were compared with the theoretical performance upon which the grade was established, and the computed and actual results were found to be in close agreement.

New Grading Specifications Used

Final location of the line was fixed on August 26, 1938; meanwhile, the work had been so planned that actual construction could begin on September 22. There are no grade crossings on the line, all highways being either closed, combined, rerouted or separated, without undue cost or public inconvenience, this having been brought about through close co-operation between railway representatives and the County engineer, the County board, and other interested parties.

The data collected in connection with the located line, together with additional field studies, borings and meteorological data, were reviewed and utilized in meeting the essential construction requirements. This information proved to be of particular value in formulating the grading and masonry specifications and the requirements for abutment and pier foundations, because, for example, the borings and tests gave evidence of weak soil in the river bottom and indicated that suitable provision should be made against deep scour.

The grading specifications developed are new and a distinct departure from the standard grading specifica-



Sketch Elevation of the New Bridge Crossing of the Cimarron River, Showing the Span and Pier Arrangement Used

rating. The method employed consisted of computing of the theoretical performance of a 5,000-ton train approaching the momentum grade at 30 m. p. h., and passing onto the adjoining 0.5 per cent grade at 11 m. p. h. The computations were based on the drawbar pull characteristics of the locomotives in service in this territory and train resistance corresponding to the normal car loadings of actual traffic. In this way the effects of the length of the train and the vertical curves were taken into account.

These calculations led to the establishment of a level bridge crossing 92 ft. above the river bed, flanked immediately at the east end by 2,800 ft. of 1 per cent momentum grade, which, in turn, connects with approximately 4 miles of 0.5 per cent grade, and to the west by a continuous grade of 0.8 per cent for a distance of approximately 3 miles. The grades at both ends of the new work are compensated on the curves which form the connections to the old line. By incorporating the section of 1 per cent momentum grade in the rise from the east end of the bridge, rather than using a straight 0.5 per cent grade, the level of the bridge was lowered about 11 ft., which effected a saving of approximately 500,000 cu. yd. in grading, in addition to large economy in the cost of the bridge.

Soon after the line was placed in service, a series of tests were made over it with the aid of a dynamometer car, these tests involving a number of trains and covering a range of tonnage. The results of these tests, par-

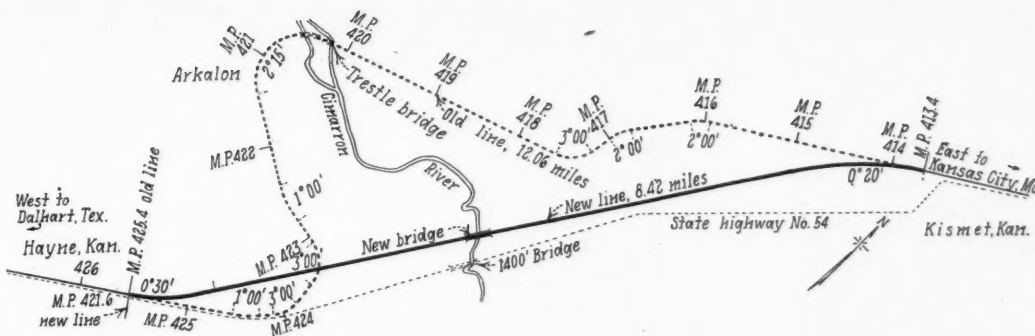
tions heretofore in general railway use. They were built around the requirements of the particular job; they are brief, simple, and practical, and were prepared in such a way as to insure harmony between the railroad and the contractor, and to enable full advantage to be taken of the latest developments in modern mechanized construction methods.

Pay quantities were measured in excavation, without waste, as all excavated material was used in embankment or auxiliary work. No allowance was made for overhaul, as by careful planning and the skillful use of mass diagrams, it was possible to eliminate the overhaul factor, alike in the interest of the railway and the contractor. The above factors account for the fact that the bids of the 10 most important contractors varied by only a few cents and that the three lowest bids differed by only a fraction of a cent.

Large Cuts and Fills

To secure the grades established required long fills in the valley on each side of the river bridge, ranging up to 95 ft. in height. These were adjoined by long deep cuts extending to connections with the existing main line. At the east end the cut is approximately $3\frac{1}{2}$ miles long, with depths ranging from 40 ft. to 60 ft. throughout much of its length, and required approximately 1,750,000 cu. yd. of excavation. The cut at the west end, on the other hand, is approximately 2 miles long,

Sketch Map of the Old and New Lines, Showing the Reduction in Mileage and Curvature Effected



with a maximum depth of about 30 ft., and involved approximately 509,000 cu. yd. of excavation.

All excavation was in soil, the cut at the west end being through uneven strata of sand, clay, gravel and caliche, varying in thickness from less than an inch to as much as six feet. The east cut was through strata of clay and caliche and of these materials mixed, covered with from four to six feet of top soil or blow sand. Both cuts were given side slopes of $\frac{1}{2}$:1 where less than 40 ft. deep, and were provided with an 8-ft. berm at about the 20-ft. level. Where a depth of 40 ft. was exceeded, a second 8-ft. berm was provided at about the 40-ft. level and the cut faces above this level, to the natural ground line, generally in lighter soil, were carried back on a slope of 1:1.

The two large fill sections, except for certain selected material laid in their bases, were built entirely from the cut excavation. The east fill, 6,600 ft. long, and with a maximum height of 85 ft., required the placing of 1,751,000 cu. yd. of material, while the west fill, 7,200 ft. long, and up to 95 ft. high, required the placing of 1,080,000 cu. yd. of material. The total excavation involved in the line change, including that required in the construction of dikes, berms and auxiliary channel changes, was approximately 3,000,000 cu. yd.

Both fills were constructed with side slopes of $1\frac{1}{2}$ to 1, and with a roadway width of 24 ft., and, because of their height, were tiered at 25-ft. levels with flat, level-grade berms 8 ft. wide. Thus, practically throughout their lengths, both fills have two or three tiers. At the greatest depth of fill, directly at the west end of the bridge crossing, the base of the fill is 340 ft. wide.

130 Trucks Used in Grading

The most significant features about the grading work were the speed with which it was carried out and the care with which it was executed to produce sightly cuts and compact, stable fills. Both because of its speed and its ability to consolidate the fills as built, motorized hauling equipment was used throughout, consisting es-

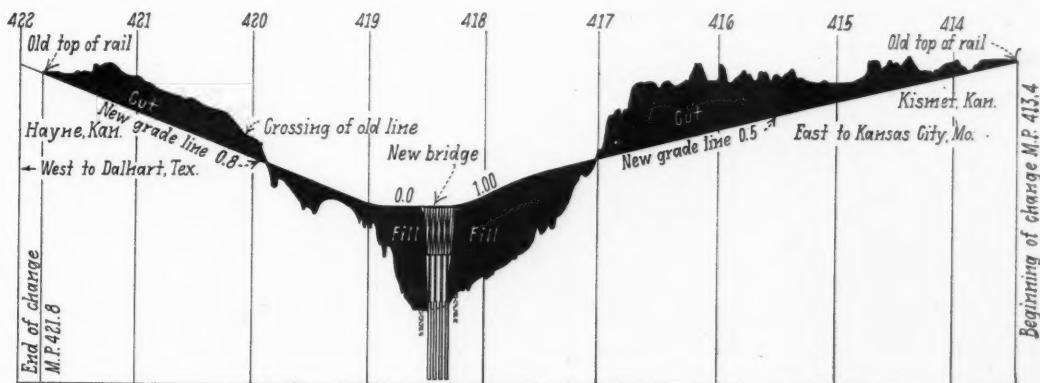
entially of three- and seven-yard motor trucks, with conventional drive, to permit high-speed hauling. As a matter of fact, practically all of the hauling between loading points and points of dumping was done at an average speed of 25 m. p. h. At the peak of the work, approximately 159 mechanized units were employed in the grading operations. With haul distances up to $4\frac{1}{4}$ miles at the east end and up to $3\frac{1}{4}$ miles at the west end, and an average haul of approximately two miles for the entire project, this rapid-moving flexible equipment of moderate capacity was much more effective than slower moving equipment of much larger carrying capacity would have been. A few tractor-type scraper carry-alls of 10-yd. capacity were employed in the work at the east end, but were utilized almost entirely for short-haul operations such as certain adjacent channel-change work and the spreading of material on the fills.

With a large complement of equipment employed simultaneously at both ends of the work, and operated two 10-hr. shifts each day throughout the major part of the work, the grading proceeded rapidly, amounting to a total of 2,772,000 cu. yd. in the first six months of operations, from September 27 to March 27, or an average of 462,000 cu. yd. for each month within this period. During the peak of the work, from 110,000 to 130,000 cu. yd. of material were moved weekly, with a peak week of 172,000 cu. yd.

Coupled with the speed of operations, all of the filling was done in such manner as to insure maximum stability of the fills with the materials available. To insure a stable foundation for the highest part of the fill on the west side, all of the soft natural surface soil over the base area of the fill for a distance of approximately 900 ft. was removed to a depth of about 5 ft. and was back-filled with sandy gravel secured from a nearby gravel pit located during auxiliary excavating operations. This precaution was not necessary on the east side.

Throughout the construction of both fills, the material was built up in layers not exceeding eight inches thick in the loose state, and was sprinkled with water as neces-

Diagrammatic Profile of the New Line, Showing the Relationship Between the Cut and Fill Sections





Looking Over the Deck of the New River Bridge, Showing the Panels of Metal Fire Breaks Provided

sary to secure the most effective compaction under the influence of the truck and tractor equipment moved over it. During the construction of most of the fill on the east side, two 10-ton rollers were also used to secure increased consolidation of the material as placed, and similar equipment would have been used in the construction of the fill on the west side if it had not been for the large percentage of sand employed in this fill, which made compaction by this means unnecessary.

The completion of the grading work was followed closely by the track construction, especially at the west end, in an effort to permit early erection of the river bridge superstructure, the bridge piers and abutments having been built simultaneously with the grading operations. The track laid consists of new 112-lb. rail, creosoted red oak ties, 7 in. by 9 in. by 8 ft. long, double-shoulder tie plates, and eight inches of gravel ballast beneath the ties.

Bridge Has Interesting Features

The final design for the river crossing provided for a single-track structure 1,269 ft. long, supported on reinforced concrete piers and abutments. This bridge, which has been named the "Samson of the Cimarron," is one of the largest bridges on the Rock Island, consisting of five deck truss spans, each 250 ft. long, with a top-chord elevation approximately 97 ft. above the low point of the river bed beneath.

The piers, which rise to a height of 55 ft. above the river bed, have footings on a thick stratum of coarse sand or gravel, from 62 to 68 ft. below the river bed level. These piers, which are similar in shape and detail, are particularly noteworthy because of their streamlined section within the rise range of the river, and their pleasing shape and architectural treatment above this level.

In connection with the design of the streamlined section, an examination was made of the efficiency of various possible shapes to select that which would have the least obstructing effect, and, at the same time, minimize the turbulence of the water adjacent to the piers. The shape decided upon was patterned after the one developed originally through extensive research by the Miami Conservancy district under the direction of Dr. Arthur E. Morgan and his associates, including C. A.

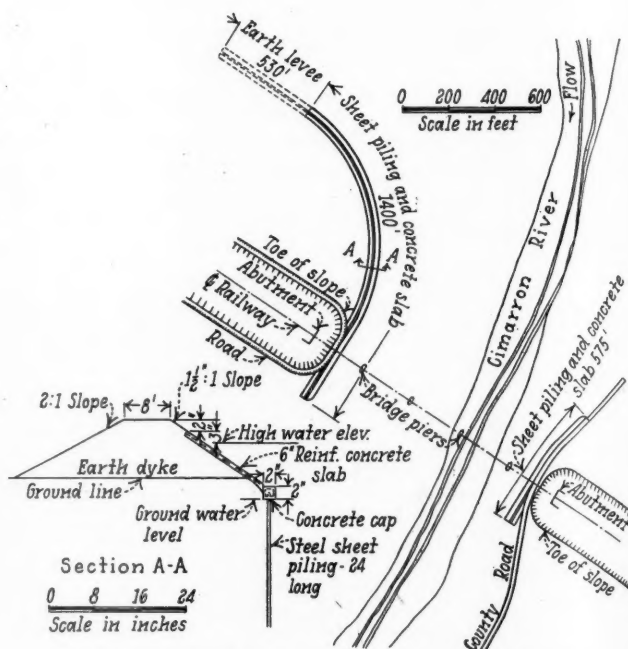
Bock and C. H. Eiffert, with certain modifications adapting it to the particular type of structure involved.

The foundation of each pier, with a footing area 44 ft. long by 24 ft. wide, and 18 ft. high, surmounted by a shaft 44 ft. long by 20 ft. wide, with beveled corners, rises to a level 18 ft. below low water level in the river. Immediately above this lies the streamlined flow section, 42 ft. long by 16 ft. wide, and 30 ft. high, rising to a height of 10 ft. above high water. This latter section is faced with steel nose plates. The superstructure of each pier above the flow section consists of two rectangular shafts or columns, 10 ft. by 12 ft. in section, tied together at the top and bottom by horizontal reinforced concrete struts. Both shafts are ornamented by recessed corners and a vertical groove fluting up each outside face.

All of the piers were sunk as steel caissons, put down by means of open excavation through dredge wells until near their final elevations, which could be done because there was relatively little flow in the river while this work was under way. The final seating of all of the piers, however, was done under air for depths ranging from 5 to 19 ft. Special timber forms were used throughout the pier construction, built in sections so that they could be lifted and reused as the sections of the piers were built up. All of these forms were lined with $\frac{1}{4}$ -in. Douglas fir Plycrete panels to minimize form marks and the subsequent surface grinding or rubbing which would have been required.

Abutments Supported on H-Piles

The two abutments of the bridge are of the U type, with their footings high in the approach fills, approximately 31 ft. below the base of rail, supported on rows of H-section steel piles. The backwalls of the abutments rise high above the seats for the deck-type trusses, and the wingwalls, at right angles to the abutment faces and supported on piles, permit the approach fills to extend out beneath them. In the interest of economy in the amount of material employed, the abutments are of relatively thin section throughout, and the bridge seats, which are essentially concrete slabs 4 ft. thick, extending out from the front faces, are supported by

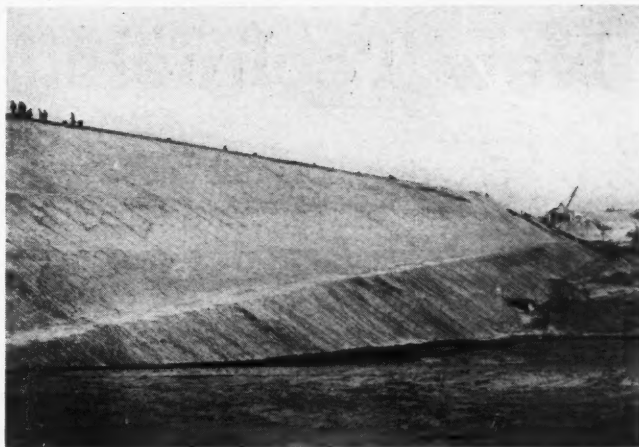


Sketch of the Flood Protection Afforded the New Opening

concrete buttresses directly beneath the locations of the bearing shoes.

The piles supporting the abutments are 12-in. by 12-in., 74-lb. H-sections, a total of 120 being employed beneath each abutment. Those driven beneath the east abutments range in length from 78 ft. to 122 ft., while those beneath the west abutment are from 78 ft. to 109 ft. long. All of the piles, which were delivered in 21- and 51-ft. lengths, required splicing in the field. The length of piles used provided a penetration of about 55 ft. in the consolidated fills, with a bearing value from 75 to 110 tons per pile.

All concrete employed in the piers and abutments was mixed in a one-yard mixer at a central batching and mixing plant on the west side of the river, near the west abutment, and was trucked to the site of pouring in one-yard bottom-dump buckets, where it was hoisted into the forms by means of long-boom, crawler-mounted cranes. Frequent tests and checks controlled the materials used and the quantities at the mixer, providing concrete of uniform strength and consistency. Altogether, the work required approximately 11,000 cu. yd., as much



The West Side Fill, 7,200 Ft. Long and a Maximum of 95 Ft. High. Contains More Than 1,080,000 Cu. Yd. of Material



The Cut on the East Side of the River, Which Furnished More Than 1,750,000 Cu. Yd. of Material, Is Approximately 3½ Miles Long

as 1,382 cu. yd. being placed in one week during the peak of the work.

Superstructure Has Special Features

The superstructure of the bridge, consisting of five 250-ft. Warren trusses with sub-divided panels, was designed for Cooper's E-72 loading. The individual spans, which are 36 ft. deep center to center of chords, are of much the usual type of construction, but incorporate several features of interest, one of which is the provision of twin lateral struts between the diagonal members of the top chord bracing in each panel, which are designed to take the lateral component of the longitudinal thrust on the spans produced by train operation, thereby relieving much of the stress on the floor beam connections to the truss members.

The deck of the bridge consists of four lines of CB stringers, equally spaced beneath the track rails, which are supported on girder-type floor beams, 5 ft. 1½ in. deep, back to back of angles, and located approximately 16½ ft. center to center. The deck ties, all 8 in. by 10 in. by 12 ft. long, creosoted and prebored and adzed, are spaced 15 in. center to center directly on the deck stringers, and are secured to the outer lines of stringers by means of ¾-in. hook bolts equipped with double coil spring washers. Walkways of two-inch plank, three feet wide, extend along both sides of the bridge, these being supported on the timber guard rails on their inner sides

and on the lower part of the framework of the railings along their outer sides.

Supplementing the two deck walkways is a third walkway extending from abutment to abutment on the center line of the bridge, directly beneath the floor beams. This third walkway, which was provided to simplify inspection of the steelwork and to afford a means of approaching from beneath any deck fire that may develop, is supported by the diagonal bracing of the spans at a level approximately 4 ft. below the floor beams. To prolong its life and increase its resistance to fire, all of the planking used in this walkway, as well as that in the two deck-level walkways, was given a heavy treatment of Wolman salts.

Special Fire and Flood Protection

For protection against the run of a fire longitudinally along the deck of the bridge, the deck is divided into panels, every second one of which is faced on top with sheet metal which covers the tops of all ties and extends continuously between them. The protected panels are approximately 15 ft. long, while the alternate unprotected panels are approximately 27 ft. long. The metal protection consists in part of 20-gage Ingot iron, and in part of 20-gage Toncanmetal, galvanized, which was furnished in trough-shaped sections, with wide top flanges on both sides, the troughs fitting down between adjacent ties and the wide flanges providing for the lapping of the adjacent pieces over the centers of the ties. This fireproofing of the top surface of the deck in panels is extended to the timber guard rails along each side, the front faces of which are also protected with sheet metal strips, bent backward over the top faces of the walkway planking.

Supplementing the fire-resisting features incorporated in the bridge itself, the structure is protected by an automatic, electric, fuse-type fire alarm system, which signals the dispatcher when the protecting circuit is broken, and sets the adjacent wayside train signals at stop, and provision was made for ready access to four Pyrene, pump-type fire extinguishers of two-gallon capacity, two of which are located at each abutment.

While the bridge opening providing 940 ft. between toes of slopes is ample to permit considerable meandering of the river channel in times of flood, a permanent system of steel sheet piling and earth dikes was installed to confine the stream within the limits of this opening under all conditions and to prevent encroachment of flood waters upon the upstream and front toes of the

(Continued on page 223)

New Technologies in Transport*

Showing how railroads have utilized the chemist, metallurgist,
inventor and engineer in providing improved
modern equipment and service

By F. G. Gurley

Vice-President, Atchison, Topeka & Santa Fe, Chicago

IN discussing the railways in this symposium it seems appropriate to make certain comparisons between the year 1914 and the present time. I chose 1914 not only because 25 years is a logical period for comparisons which should be helpful to a proper appreciation of our immediate problem and in evaluating probable future developments, but also because then it was we witnessed the outbreak of a terrible war in Europe and today we are witnessing a repetition of that catastrophe. Now, as in 1914, America inquires about the ability of the railroads to render adequate service.

In examining the operating range of locomotives we find that about 1914 came the realization in many sections that locomotives could be run through the station where locomotive crews changed and it was found that despite dire prophecies it was no longer necessary to assign a locomotive to each engineman. I think no greater mental hazard has been overcome and this serves as a reminder that all too frequently mental hazards are the largest ones involved in achieving an improvement. Santa Fe steam locomotives which burn oil now operate over 1,500 miles in continuous passenger service. Diesel locomotives are assigned to passenger-train runs in excess of 2,200 miles and these distances can be extended if desired. Freight locomotives usually are changed short of their operating range due to fuel used in various districts or differences in the gradient. Switching locomotives have rendered more than a month's uninterrupted service except the time required for changing crews and making necessary inspections.

What might be termed the "overnight range," which is related closely to speed, has been extended within these 25 years from about 500 miles in passenger service to about 1,000 miles and the "overnight range" of freight trains has been proportionately lengthened. Modern trains have functioned splendidly when subjected to the "proving ground" tests of continuous runs in excess of 1,000 miles without stop, during which average speeds as high as 83 miles an hour have been attained.

Dramatic Increases in Speed

The increased speed of present day operations as compared with 1914, particularly passenger trains, probably is the most dramatic achievement of the railroads; this is particularly notable since high-speed trains invariably are air conditioned. Passenger-train service between Chicago and the West Coast is now 24 hours faster than it was in 1914 and all service, both passenger and freight, is geared to a faster tempo.

Safety and comfort are essentials and with these pre-

requisites the goal of railroad managers has been to establish schedules sufficiently fast between terminals to attract patronage and then to make the schedules with the lowest possible maximum speed. To obtain a relatively high average speed with a reasonable maximum speed necessitates an analysis of the causes of stops or slow downs. This may result in changes in track alignment and signalling, reductions of curves, electric manipulation of switches, longer turnouts and crossovers; and more attention to the details of track and bridge maintenance to avoid "slow orders"; greater fuel capacity on the locomotive, permitting a longer run without a stop, and where it is necessary to stop, improvements such as larger water cranes, expedited delivery of coal, faster handling of fuel oil, and well planned and executed handling of passengers and headend traffic. These are important contributions to a high average speed without the necessity for speed bursts. Municipalities commonly impose speed restrictions over street crossings. Better signal protection may remove these. Separation by elevation or relocation may be necessary if the restriction is to be avoided. Here again cost is a determining factor.

The two most important things in connection with rolling stock which affect high speed, both with reference to the average and the maximum are the power plant and the weight of equipment. The ratio of weight to horsepower should permit rapid acceleration. When demands for greater safety caused the wooden car to disappear from primary trains, structural steel with a tensile strength of about 50,000 lb. was the only material available for passenger-car construction. The use of this material coupled with cross-sections and contours accepted as good practice until quite recent times resulted in cars that were undesirably heavy. Older type chair cars were not air conditioned but weighed about 155,000 lb. With the same allowance for lounge and lavatory purposes that is provided in the modern cars the weight per passenger was about 3,000 lb. Modern lightweight chair cars, including the weight of air-conditioning equipment, weigh about 1,900 lb. per passenger. In these calculations it is assumed that each car will accommodate 52 passengers. New type lightweight sleeping cars vary from about 4,100 lb. per passenger in the case of the all-section car to about 6,600 lb. per passenger in room cars.

[Mr. Gurley here referred to the development since 1930 of strong aluminum alloys, stainless steel and low-alloy high-tensile steels for car construction, the first two mentioned presenting the greatest opportunity for weight saving, but costing over 10 times as much as ordinary structural steel. He said this price differential needs to be reduced.—Editor.]

The principal characteristics of the Diesel-electric locomotive which have appealed to railroad managers in

* Excerpts from an address presented at a conference on this subject, sponsored by the publishers of Life and the University of Michigan, and held November 1 to 3 at Ann Arbor, Mich.

the operation of these high-speed trains which may point the way to the "performance limits in transportation," are less static weight per wheel, particularly driving wheels, a reduction in unsprung weight, the complete elimination of dynamic augment, or the hammer blow incidental to the unbalanced forces of the reciprocating steam locomotive, the shorter wheel base for driving wheels, greater availability and lower fuel costs. The Diesel has a thermal efficiency of about 27 per cent as compared with about 8 or 9 per cent for a good steam locomotive and about 14 per cent for a gasoline engine.

Another advantage is that a Diesel-electric locomotive assists materially in narrowing the spread between the average speed and the maximum speed. This is possible because among other things less time is required for refueling and water, and as compared with a coal-burning steam locomotive there is the complete elimination of fire and ash-pan cleaning. Deceleration is faster with the Diesels because it is possible to employ a higher braking ratio. It is common practice to utilize a comparatively low braking ratio on the drivers of steam locomotives. The tires of a steam locomotive are shrunk on and held in place by the force of contraction and it is poor judgment to attempt heavy braking action because of the dangerous possibilities of a high degree of temperature on the tires of drivers. The Diesel by reason of less weight per wheel, shorter wheel base, and lowered center of gravity may negotiate curves at a higher rate of speed than a steam locomotive.

In discussions about the relative merits of the Diesel-electric and steam locomotive attention has been called to the fact that a lowered center of gravity tends toward an increase in spreading action on curves which is an undesirable thing. By reason of mathematical calculations which take into account the less total weight and less unsprung weight of the Diesel and by reason also of the indications of stress gages coupled with expressions from experienced track men, this writer is of the opinion that the Diesel-electric locomotive, with its center of gravity of approximately 59½ in. as compared with a center of gravity of 81 in. for a Hudson type locomotive with 84-in. drivers, exerts less lateral force against the outside rail on curves.

The principal objection to the Diesel is increased capital investment—the cost per horsepower being about 2½ or 3 times that of a steam locomotive. The greater availability of the Diesel locomotive, or in other words, its ability to produce more locomotive miles per year, reduces or in some instances may eliminate the investment handicap if the investment be considered as "cost per locomotive mile per year" rather than merely the cost per locomotive.

Steam Locomotives Greatly Improved

In the 1914 era designers of steam locomotives focused their attention more upon tractive force at the start and in lower speed brackets than upon tractive force at higher speeds. An analysis of two locomotives—one built in 1914 and the other in 1938—provides interesting comparisons. Each locomotive develops about the same tractive force at the start but at 60 miles an hour the tractive force of the modern locomotive is 235 per cent in excess of the 1914 locomotive and 60 miles an hour is not an uncommon speed for freight trains. Few people realize that this important improvement has been built into a modern steam locomotive.

There isn't a great deal of difference in the exterior appearance and perhaps that is why many people think the steam locomotive is the same as it was years ago.

But that is not true. This desirable increase in transportation capacity is accomplished by a better designed locomotive, including higher steam pressures subjected to superheating, larger grate area, increased heating surface, improved valve gear, higher driving wheels, and other betterments. Modern superheaters raise the temperature of steam of 300 lb. pressure as much as 350 deg. F. and save at least 30 per cent of the fuel; they eliminate stops for refueling and help, therefore, in attaining a higher average speed. Roller bearings are utilized and these contribute substantially to availability, consequently more miles per locomotive per year. These superior qualities indicate the opportunities under many circumstances to lower transportation costs by replacing old with modern power. While I am one of those who favor a Diesel-electric locomotive for high-speed passenger-train operation, I am nevertheless impressed with the many fine qualities of the steam locomotive and it should have a long and useful railroad career.

[Mr. Gurley referred at this point to the problem of braking and mentioned the disc-type brakes now being tested in regular service on the Santa Fe and the Burlington.—Editor.]

Physical Limitations Affecting Speed

The performance limit as restricted by speed, in the writer's opinion, will be the influence of economics rather than mechanical or physical limitations, although these latter are interesting and subject to further discussions in this paper.

Curvature of track is the outstanding physical limitation. On cars having car-floor level 51 in. above the rail comfortable speed on one-degree curves with proper spirals and adequate elevation is only slightly more than 100 miles an hour and on a two-degree is about 80 miles an hour; on sharper curves it is proportionately less. For years the car-floor level has been 51 in. above the rail. While it is entirely feasible to build cars closer to the rail which produces a lower center of gravity and allows somewhat higher speeds on curves, the advantages of having equipment which can be interchanged readily with other cars is so pronounced that this 51 in. limitation is almost as fixed as the gage of the track. A few trains for particular assignments have been constructed with lower floor levels, but present indications are not many more will be. Adverse grades affect both the maximum and the average speed. More power will overcome some of that handicap, but commonly the steeper grades and sharp curves are found together.

Economics a Limiting Factor in Design

To show the limiting influence of economics as applied to locomotives and cars I have assumed a hypothetical train. The weight of this train is 1,050 tons, consisting of a 300-ton Diesel-electric locomotive developing 4,000 hp. at the crankshaft and about 3,200 hp. at the rail. This 4,000-hp. power locomotive is made up of two 2,000-hp. units coupled together and with controls actuated from one location in the cab. There are 15 coaches weighing 50 tons each and accommodating 50 passengers each, so that the total capacity is 750 persons.

If the cars are streamlined the Diesel locomotive will pull the train on tangent level track at an operating speed of 90 miles an hour and attain a balanced speed of 100 miles an hour. This is accomplished by the development of 5.4 hp. per passenger; the cost per horsepower is \$87.50. Based upon current costs for trailing

equipment this represents a total investment of about \$1,800 per passenger.

If we desire to move the hypothetical train of 1,050 tons faster, we find that we must reduce the weight of coaches and the number of passengers and increase the weight of the power plant. To add 50 miles an hour or to reach operating and balanced speeds of 140 and 150 miles per hour, respectively, on tangent level track, the passenger carrying equipment must be reduced to 6 cars or a total of 300 passengers. A power plant composed of five 2,000-hp. units developing a total of 10,000 hp. at the crankshaft is required. This is 33 horsepower per person or 500 per cent more than necessary at 90-100 miles per hour. The investment per passenger becomes \$4,150. Costs per passenger for fuel, locomotive maintenance, and certain other items will increase somewhat proportionately.

The force of economics is all the more impressive when account is taken of the fact that restrictions imposed by curvature will be the same on either train.

The six car train powered by a 10,000-hp. Diesel-electric locomotive will accelerate from a "standing start" to 100 miles an hour in $4\frac{1}{4}$ miles, nevertheless if it has just rounded a one-degree curve at a speed of 100 miles an hour it will require about $16\frac{1}{2}$ miles of tangent level track to reach 140 miles an hour. Tractive force decreases sharply at high speeds and air resistance increases. So that even with a 100 miles an hour start when entering the tangent the 140 miles an hour maximum may be maintained only for the distance remaining on the tangent in excess of the $16\frac{1}{2}$ miles required to attain 140 miles per hour. There are not many tangents longer than $16\frac{1}{2}$ miles. If entrance to the tangent track is controlled by a sharper curve conditions are somewhat less favorable for attaining this maximum. On the other hand, to the extent that there is descending grade on tangent track the situation is bettered, because where the power plant is assisted by a descending grade obviously it will reach its maximum more easily and quickly than on level track. Unfavorable economics result also from projecting the original 4,000-hp. locomotive into higher speed brackets with constantly reducing pay load.

Existing Diesel-electric locomotives are not designed to run 140-150 miles an hour. Some of the more important improvements needed for any such possible increase in speeds relate to gear ratios and traction motors where centrifugal force is a factor, control of lateral oscillations, and adequate springing to take care of slight irregularities in the track. It is believed that these are not insurmountable obstacles from a mechanical standpoint.

Steam engines of the Hudson type, i. e., a 4-6-4 wheel arrangement, will pull this hypothetical 15-car train as fast or perhaps a little faster than the Diesel on level tangent track but there is no existing reciprocating steam locomotive suitable for operation at 140 or 150 miles an hour.

[Mr. Gurley here explained at some length how dynamic augment has been held within desirable limits by proper design and the use of high-tensile steels. He mentioned the new four-cylinder reciprocating high-speed locomotive and the steam-turbo-electric locomotive as possible contributors to railway progress.—Editor.]

Improved Freight Equipment and Service

So far emphasis has been upon passenger-train operation because that always has been and probably always will be the fastest of rail transportation, but from the standpoint of revenue and perhaps from the standpoint of service, freight-train service is of greater importance.

In passenger-train service the locomotive is the mechanical limitation to speed, that is, the trailing units of today may operate safely at speeds as high or higher than the locomotive but that is not true in freight service. Many of the locomotives now assigned to high-speed freight service are "dual service locomotives." In other words, they are used in high-speed passenger as well as freight service and are capable of speeds beyond the limitations of freight cars.

The freight cars which it may be said are typical are 40 ft. and 50 ft. in length and generally are equipped with four-wheel trucks with 5 ft. 6 in. wheel centers. While the cost of an individual freight car is about 5 per cent of the cost of a passenger car yet the total sum invested in freight cars in America reaches tremendous proportions, and I think it is fair to say that first cost has exerted a greater influence in the case of freight equipment than passenger equipment, that is, the possibilities of freight equipment have not been engineered as thoroughly with reference to elimination of weight or to attaining maximum speed.

The elimination of needless weight in freight cars is desirable in improving the ratio of weight to power in freight trains. It helps in acceleration the same as it does in passenger trains but not necessarily to the same degree. Hundreds of cars have been built which made generous use of the low-alloy high-tensile steels developed a few years ago. Some box cars built as experiments weigh only 9.5 lb. per cu. ft. of load-carrying space and this is about 30 per cent less than conventional cars built prior to the advent of the low-alloy high tensile steels. The performance of these cars will be helpful in determining the question of the proper weight of freight equipment.

A Diesel-electric locomotive designed for freight service developing 5,400 hp. at the crankshaft is now in test service on roads interested in its possibilities. It has not been built for speeds higher than those now made by modern freight locomotives. Its characteristics, however, should permit raising the all desirable average miles an hour, with the same maximum speed.

This is a bold challenge in the field where the steam locomotive is in its most favored position. With possible rare exceptions the schedules on freight trains, even fast ones, are such that the number of Diesel locomotives utilized for the protection of the schedules will be so close to the number of modern steam locomotives required for the same service that if existing costs per horsepower continue the handicap of larger investment for the Diesel will be more formidable. In other words, there is not the opportunity here for the Diesel to make more miles per year per locomotive as in the case of high-speed passenger assignments nor is there the same degree of support for the Diesel from the standpoint of track maintenance. Fortunately for the railroads we will have an opportunity to appraise the two locomotives in fast-freight service and to decide which is better suited to further the performance limits of transportation.

What Should Be Expected of the Track Structure

The civil engineer and the mechanical engineer differ as to whether the limiting factor, other than economics, is the track or the locomotive and cars. The mechanical engineer may want track which "can take it" and while a stiff rail is essential, nevertheless our efforts should be to reduce the blow of the hammer rather than to increase needlessly the size of the anvil.

On the other hand, regardless of the attention given to equipment, no train can be expected to ride better than the track over which it runs. Track does not get

bad all at once, and the success of maintaining good track is to correct irregularities as soon as they occur; if that is not done conditions are aggravated rapidly. Irregularities not bothersome at low speed are alarming at extremely high speed.

Rail should not be the limiting factor in the performance limits of transportation, although longer rail with resulting fewer rail joints is desirable. It must be of a heavy section to insure adequate stiffness. Batter must be kept at a minimum, welding as frequently as necessary. There must be plenty of "fishing" in the angle bars. Coupled with these must be adequate ballast and good ties and then I believe the track structure, perhaps with some increased cost of maintenance, can accommodate the maximum speeds of present and prospective equipment. This presupposes that in the construction of locomotives and cars, especially the former, unsprung weight will be held to a minimum, springs will improve, and that static loads per wheel do not exceed, in fact should be slightly under, present maxima and that if the type of motive power does not completely eliminate dynamic augment that it is reduced below that heretofore prevailing.

I dislike to prophesy but to complete this section of the symposium a prophecy seems desirable. My opinion is that in the next few years there will be only a moderate increase over existing maximum speeds, and that the average miles an hour of the faster trains, and others too, will become somewhat higher by reason of elimination of "slack" in the schedules and continued improvement in the things which cause slow downs and stops, perhaps coupled with a reasonable increase in the ratio of horsepower to weight to assist in acceleration.

Railroad Transportation Capacity

I believe this might be covered adequately by one word—"unlimited." The railroad is unique in that it combines in one operation the flexibility and convenience of the individual car with the economy of mass movement in trains between stations. Other methods of transportation by land employ vehicles which move as separate or individual units. One of the fundamentals of transportation is to move things with a minimum expenditure of energy. Railroads use the four commercial sources of energy; i. e., electric, steam, gasoline, and Diesel engines, and I am convinced that for the speed incidental to railroad passenger- and freight-train service the railroads can provide mass transportation with less horsepower per unit than any other mode of transportation. Movement by separate vehicles is essential. In fact, even the wheelbarrow is supreme in its sphere, but the capacity limitations of other methods are more restrictive. Railroads are the only form of land transportation which accept any kind of normal commercial freight, any time, any place, for any destination.

Analysis of the data reflected in the table will be helpful in gaging the capacity of the American railroads. The use being made of the plant is shown by a decrease of 38 per cent in passenger miles with little change in revenue ton miles. The aggregate carrying capacity of all railroad owned cars is about 5 per cent less than it was but the greater capacity of the plant is indicated in the two important elements of efficiency, i. e., ton miles per freight-train hour and ton miles per car day. For each hour a train is on the road it has accomplished 66 per cent more and each day the freight car 48 per cent more.

Probably the most impressive thing is an increase of 10 billion dollars in the investment account with a comparatively small change in the first-track mileage, or

what might be termed the route mileage of the American railroads. This means that 10 billion dollars have been expended in a time when the size of the plant has not increased and that this tremendous sum of money, generally speaking, has been for improvements and betterments which make possible a more economical, a more expedited, a more efficient and otherwise better service and a larger capacity. Operating technique is much more efficient and that has benefited capacity limitations.

When made available the railroads have utilized the products of the inventor, the metallurgist, the scientist, the engineer, and the builder. Plastics are being used in the crosshead gibs and liners on steam locomotives, rubber as a substitute for steel in springs, coach seats and sleeping-car mattresses. Electric magnetic forces are utilized to search out hidden defects in rail and metal parts. In fact, I doubt that there is a new technology of any art or science which has not been utilized in the railroad plant.

Line Capacity and Terminal Capacity

As we consider what might be termed the practical aspects of performance limits as restricted by capacity it seems to me that there are two parts in the problem, especially as it relates to freight carrying capacity: (1) Line capacity, and (2) terminal capacity.

The first is that part of the railroad which may be said to be under the control of railroad management and where new technologies may be used to advantage in

Comparison Between Selected Items Which Reflect Railroad Capacity

	1914	1938	Increase or decrease, per cent
Total property investment accounts	\$16,506,868,682	\$26,055,536,805	+ 57.8
Mileage operated:			
First track	256,547	250,582	....
Other main tracks ..	32,376	41,579	....
Yard tracks and sidings	98,285	122,411	....
Total	387,208	414,572	....
Aggregate tractive force	1,886,549,588 lb.	2,123,464,000 lb.	+ 12.56
Average tractive force	28,305 lb.	49,803 lb.	+ 75.95
Ton miles per freight-train hour	7,506*	12,479	+ 66.
Aggregate capacity all freight cars	88,400,000 tons†	84,032,035 tons†	- 4.94
Ton miles per car day	352	521	+ 48.
Percentage of total freight cars represented by wooden cars	48	4.8	....
Revenue ton miles	284,924,749,000	290,084,371,000	+ 1.8
Passenger miles	35,129,268,000	21,628,718,000	- 38.43

* 1921 figure, 1914 not available.

† Does not include privately owned cars. No record of 1914 privately owned cars, but for 1938 total 290,668 cars. Total carrying capacity not available.

producing economies, rendering better service, increasing speed, and thereby enlarging the plant capacity. It includes certain yard tracks and other facilities which normally classify as terminals but are not so considered here.

The capacity of the line is tremendous. It is ready to handle a substantially greater volume of traffic than ever was handled on the American railways simply by the addition of locomotives and cars proportionate to the business which the American people want to move via the railroads. There is a joint obligation on the part of railroad management and the public, perhaps functioning through our splendid Shipper Advisory Boards to determine when the additional locomotives and cars may be required and then it is the problem of the railroads to finance the acquisition.

I use the word "terminal" to signify the place where transportation terminates and cars are loaded and un-

(Continued on page 214)

Electricity in Railroad Service

Electrical Engineers receive reports on power supply, power conversion, motive power, electric braking, lighting and unsolved problems

EIGHT papers dealing with railroad subjects were presented at the 1940 Winter Convention of the American Institute of Electrical Engineers, New York, January 24.

Power Supply from the Customer's Point of View

"Power Supply for Railroad Electrification and Fundamentals of Power Contracts" was the title of a paper presented by E. R. Hill, Gibbs & Hill, Inc., New York. He pointed out that the indicated horsepower of locomotives on 136 Class I railroads aggregates 100,000,000 hp. while the aggregate installed capacity of all utility plants—hydro and steam—is approximately 50,000,000 hp. Only 1.3 per cent of Class I railroads are electrified. This includes 24 railroads, 2,965 route miles and 6,950 miles of track. Various advantages of electrification were listed, and the reason given for the relatively slow progress in electrification was that operating savings do not produce a sufficiently quick payout of capital cost.

One chance for improving the economics of electrification lies in the field of improving power production. In the past 15 or 20 years there has been a reduction of about 25 per cent in the coal consumption on steam railroads per transportation unit. In the same period there has been a reduction of nearly 50 per cent in coal burned per kw. hr. in steam electric power plants. A table was included to show how load factor improves with extension of electrification to all services. A large proportion of power for electrification is now purchased.

The author stated that the power supply system—railroad and utility—should be so planned as to involve the minimum total capital expenditure, and that it is desirable to shift to the utilities as much as possible of the cost of power supplying equipment. It was suggested that some form of equipment trust might be used for financing the roadway power equipment at favorable rates. Suggestions were also made for improving power contracts to the benefit of both the user and power producer. It was stated that contracts should be made for long terms, possibly 20 years, with renewal options, that the utility should preferably supply the kind of power needed by the railroad, that the utilities' networks be employed as the connecting unit when power is supplied at a number of points, that the railroads be able to purchase power at a flat or sliding rate per kilowatt, that demand charges be made on a monthly basis by averaging three or more clock-hour peak loads in the month, that energy charge should be based on the summation of meter readings at all points, that a correction factor be introduced when the power supply is essentially hydro-electric, to take into account high first cost and low operating cost, and that power contracts should be simplified and load-factor guarantee eliminated.

Power Supply as the Producer Sees It

The subject of "Railway Power Supply" was presented by Philip Torchio, vice-president, Consolidated Edison

Company, New York. His paper outlined forms of contracts for the purchase of traction power by the railroads from the utilities, which conform very closely with the specifications for power contracts laid down by Mr. Hill in his paper. He also suggested that economies in power transmission systems may be effected by using the heavily-interconnected utilities' lines instead of a railroad wayside transmission line.

Concerning the status of electrification, the paper stated "notwithstanding the fact that steam railroads have had the possibility of using electric traction available to them for many years, they have not found it feasible to utilize this form of power except for a few special cases. Mr. Torchio concluded his paper with a reference to future possibilities as follows:

"Up to 1937 the railways in the United States had electrified only to the extent of consuming 1,627 million kilowatt hours, which is estimated to be less than 2½ per cent of the total business. This would indicate that, under present conditions and prevailing prices of coal, electricity has not demonstrated definite advantages over steam traction except in a very few special cases where other considerations unrelated to operating costs might have influenced the change or where heavy traffic conditions and relatively high operating speeds prevail. We need considerably more analytical information to clarify the problem as to why the largest industry in this country has not adopted electric traction more widely. For the present, therefore, it is impossible to make any sound forecast of its probable growth.

"We must, however, bear in mind that changes in this country are apt to be rapid and powerful and that the utilities may eventually find in the railways a field for steadily expanding their power sales. The theoretical demand for such services, if all the railways were to be electrified, would be of the order of three-quarters the present output of the entire central station industry in the country. Only a third of this potential total would be as large as the present consumption of all residential consumers.

"There are many obstacles in the way of further electrification which are not related to the cost of electric power but, to the extent that this cost influences the whole problem, the utilities have demonstrated that the railways can buy electricity from them more advantageously than they can secure it in an alternative way. In securing this business the utilities would be benefiting all their customers, because the economies realized from service to the railways ultimately accrue to the advantage of all users of electricity."

Trends in Railroad Motive Power

A paper by Sidney Withington, electrical engineer, New York, New Haven & Hartford, included a brief discussion of three general classes of railroad service—passenger, freight and yard switching—and the relation of each of these classes to developments in motive power. Certain problems have been introduced in railroad opera-

tion by the growing demands for higher scheduled speeds and for increasingly drastic economies in operation. Higher scheduled speeds mean not only higher maximum speeds but higher rates of acceleration from start and after necessary slow-down. This means either lighter equipment or more horsepower, or both. The introduction of such luxuries as air-conditioning, greater intensity of car lighting, etc., also increases the demands for power. Economies are obtained by higher thermal efficiency in motive power, greater hauling capacity, decreased maintenance costs, greater annual mileage and longer runs between terminals.

Various types of locomotives were discussed with relation to their application to the classes of service mentioned. Conventional steam and Diesel and electric locomotives and a number of experimental types which show promise, were touched upon, and attention was called to noteworthy advances in efficiency, capacity and operating characteristics.

Of especial interest was one paragraph in the paper which correlated the cost of various types of motive power. It read as follows:

"Based on rated drawbar continuous horsepower capacity, the relative rates per horsepower are: for road engines; standard steam, including tender 190-220 lb., Diesel 150-160 lb. and electric 100-120 lb. The ratios of cost, also very approximately stated, are: standard steam 100 per cent, electric 250 per cent and Diesel 330 per cent. It is added that on account of the more generous short-time overload characteristics of electric equipment (as compared with steam or Diesel), the figure indicated for electric locomotives, as compared with steam, may be materially reduced in specific instances. If, for instance, ninety per cent overload can be usefully employed for short periods as required in a given service, the figure of 250 per cent for the relative cost of electric locomotives would be reduced to the order perhaps of 130 per cent and the weight per horsepower reduced from 100-120 lb. to perhaps 55-65 lb.

"The various other types of locomotives which are generally somewhat experimental cannot be considered in a comparison even as rough and approximate as is that quoted. It is quite possible that the practice of manufacturing Diesel locomotives for stock from standard designs may become common, reducing materially the cost through quantity production. Indeed, this has been done to a slight extent in the case of Diesel switchers."

Network Coupling

"Network Coupling by Means of Static, Electronic Frequency Changes" was the title of a paper by Othmar K. Marti, engineer in charge, rectifier design, Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

The paper discussed methods of frequency changing, using electronic rectifier-inverters, which would transform 3-phase power of 60 cycles into 25 cycles, the frequency commonly used by the railroads. The systems for other frequencies as used today in Europe were briefly referred to and discussed only where they have a bearing on the systems suitable for obtaining 25-cycle power.

It was stated that the advantages of an electronic frequency changer, as compared to rotating converters are high efficiency, very simple operation, no necessity for special starting equipment or high starting load, instantaneous starting up of the equipment, small weight, especially of the control apparatus, which reduces cost for housing and foundation.

The disadvantage of such converters is the distortion caused by them on the 3-phase supply network,

unless somewhat large and costly energy-storing devices are employed. In the case of the rotating converter, the momentary energy differences between the 3-phase, 60-cycle input and the 25-cycle output are taken care of by the inertia of the rotors.

Application of Traction Motors

The use of traction motors for street cars, trolley coaches and electric locomotives, was described in a paper by F. E. Wynne and G. M. Woods, both of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. It pointed out recent changes in transportation requirements, tending toward greater standardization of equipment, and summarized the effects of various operating conditions. It described the manner in which the locomotive performance is dependent upon the heating and cooling curves for the a.c. motor. Intensive study of these curves, with relation to operating requirements, has resulted in greatly improved operation on electrified lines.

Electric Braking

"Electric Braking for Railroad and Urban Transit Equipment" was the title of a paper presented by F. H. Craton and F. M. Turner, both of General Electric Company, Erie, Pa. The following is a summary of high points concerning braking of heavy trains:

Increased speed and length of trains have created new braking problems. In the case of freight trains, length creates more difficulty than speed and, conversely, passenger braking is more affected by increased speed. Higher speeds descending grades are required and deleterious effect on wheel life and performance must be avoided. Maximum brake effect requires variation of brake pressure with speed and recognition of transient phenomena due to condition of track, wheels, shoes, brake rigging, etc. Regenerative electric braking is almost ideal for holding trains on grades. Dynamic braking is more flexible for retarding a train. Dynamic braking has been applied to the Union Pacific's steam-electric locomotive and might be used on Diesel-electric locomotives, the heat of locomotive braking being dissipated in air-cooled resistors or in the engine-cooling system.

Production and Application of Light

"Progress in the Production and Application of Light," presented by A. L. Powell, supervising engineer, Incandescent Lighting Department, General Electric Company, New York, was a description of new and improved light sources and their use in industry. Those which have railroad application are as follows: Fluorescent lamps are now standard in 18-, 24-, 36- and 48-in. sizes, and efficiencies of the white are now 35 to 47 lumens per watt, a considerable increase. The principle of fluorescence has been applied to the Cooper-Hewitt lamp and the result is a 100-watt lamp producing 5,000 lumens. No claim is made for white or daylight color quality. This lamp finds particular use for high-level industrial illumination with units mounted relatively low.

Two-hundred-fifty-watt lamps, burning at low temperatures to produce radiation in the low visible and infra-red region, are now made for drying synthetic enamels and lacquers. The time required is only 10 to 15 per cent of that needed by other methods.

The standard life of 200- and 300-watt lamps has been reduced from 1,000 to 750 hr. in line with the production of light at minimum operating cost.

Sealed-beam automotive headlight lamps, standard for

most 1940 cars, produce higher beam candlepowers and assure proper beam direction.

High-intensity, mercury-arc lamps, suitable for shop lighting, are now made in sizes ranging from 85 to 400 watts, inclusive. These constitute highly efficient light sources.

The germicidal lamp, known as the Sterilamp, used in the air passages of a few air-conditioned cars, and hospital operating rooms, and for the sanitation of drinking glasses, etc., is now made in 10-, 20- and 30-in. sizes with ratings from about 10 to 20 watts.

The author stated that "new cars and buses in general are quite up-to-date from the lighting standpoint, and much work has been done in revamping and modernizing old vehicles."

Unsolved Problems

A paper by J. A. Noertker, Cincinnati Street Railway Company, Cincinnati, Ohio, entitled "Unsolved Problems of Electrical Engineering in the Field of Transportation," dealt with requirements, both of main-line railroads and urban transport systems. In his introduction, he stated that if public transportation is to survive, the industry must strive toward higher levels of convenience, speed, comfort, efficiency and attractiveness. Today, he said, the public assumes that safety has been given adequate consideration.

Several European countries have been experimenting with the use of commercial frequencies for electric traction power, and have built locomotives for utilizing these frequencies directly. It is obvious that the maximum economic advantage of using central station power is obtainable only if the catenary is operated at commercial voltage and frequency, and the author suggested that the situation offers a challenge to the skill and ingenuity of electrical engineers. The author also stated that when the power is furnished to railway substations over regular commercial high-tension lines, the joint use of transmission lines and distribution facilities is dependable and economical; that with suitable railway and power system design, such commercial feeders in no respect jeopardize the transportation service.

Closely related to the problem of power supply is that of catenary construction. A considerable reduction in its cost would do much to extend the use of electric traction. The hope was also expressed that the railroads will eventually standardize on one system of power distribution. It was added that further standardization of motive power units would do much in giving the railroads the tremendous economic advantage of mass production.

The opinion was given that rheostat losses in d.c. control equipment are too high. The Metadyne control, recently developed in England, was described. This type of control reduces rheostat losses and allows for regenerative braking, but the equipment is complicated and heavy.

The author suggested that basic improvements may be made by adapting inverters and d.c. transformers of the commutator type to d.c. traction control.

Need was expressed for some simple, efficient equipment that will convert 600-volt d.c. to low-voltage a.c. power, for train lighting, battery charging and auxiliary circuits. This might be accomplished by a vibrating inverter.

Other suggestions of the author were for lightweight batteries, with higher voltage per cell, better thermostatic control of heat on transportation units, less expensive d.c. lightning arresters for cars and locomotives, an effective system of station announcement to be used on passenger

trains, and means for avoiding sleet coatings on overhead contact wires.

Improved research instruments asked for included one which would give a graphic picture of the factors affecting riding comfort, another which would determine and measure graphically the presence of objectionable odors or fumes. Concerning research developments, the author said: "They (the railroads) do excellent work, but the tempo of their achievement, due to the very nature of the volunteer type of organization, is inadequate to meet present-day competition. Individual manufacturing companies have made noble efforts to keep the public transportation industry abreast of the times. The money they can afford to spend on new developments, however, is strictly limited to potential profits they can make from the sale of new equipment. When the prospects for the sale of new equipment vanish the development program slackens at the time when it should be accelerated. Somehow, the problem of maintaining an adequate research and development program must be solved."

New Technologies in Transport

(Continued from page 211)

loaded by the public, and where the railroads have little or no control. Cars are mobile things; they are not designed for warehouses, but if for any reason whatsoever cars are not loaded or unloaded promptly, tracks in terminals, the capacity of which was predicated upon prompt loading and unloading, become congested and there is an interruption in free circulation—the very essence of railroad capacity. If there is any danger of overtaxing the capacity of the American railroads in a great national emergency about which there is discussion today it lies in the fact that the public may fail in efficient utilization of railroad cars. In the World War it was this very thing which brought on congestion at terminals, resulting in car shortages and the emergency which resulted in government control of the railroads. With the knowledge gained from that experience there is no reason for a recurrence.

The railroad industry solicits continued assistance from the chemist, the metallurgist, the inventor, the engineer, and the others whose creative genius have given us better tools with which to work, and hopes for alloys and materials not available today. It seeks the sympathetic consideration of its problems by all because in the final analysis the extent to which the railroad plant is utilized and the policies which affect costs and the ability to raise money for additions and betterments influence, if not actually control, our performance limits.

DECEMBER 14 MARKED THE 100TH ANNIVERSARY of the opening of the Hartford & New Haven, now an integral part of the New York, New Haven & Hartford network. No special celebration was held in commemoration of the anniversary in view of the fact that the centennial of the opening of the Granite railway in Massachusetts, another part of the New Haven system, was celebrated 13 years ago. The Hartford & New Haven was built to connect with steamboats to New York at Belle Dock, New Haven, Conn., and boat trains only were operated until 1849, when arrangements were made to connect with the New York & New Haven which had been opened for service the year before.

Motor Transport Section



Tractor and Trailer Units Are Used in Heavier Haulage

Fourteen Thousand Trucks Comprise Express Fleet

Equipment and operating knowledge of subsidiaries being
widely used by railways for co-ordinated service

APPROXIMATELY 14,000 trucks are operated by the railway-owned express companies in the United States and Canada. The fleet operated by the Railway Express Agency ranks second only to that of the United States Government in this country, while the Canadian Pacific and Canadian National express fleets are outstanding in Canada.

The background of highway operations of the express companies extends into the horse and wagon days, and beyond to the pony express that played such a romantic and important part in the development of the West. The express companies realized the advantages of motorization at an early date and began the acquisition of a motor truck fleet in the "Dark Ages" of highway freight transportation about 30 years ago. They had the usual experience of pioneers in an infant industry in acquiring a large number of assorted motor vehicles of all types and sizes, requiring the storage of enormous supplies of parts to keep going and large maintenance facilities for the periodic general overhauling of equipment that was necessary with the cumbersome and, judged by the present high standards, expensive and inefficient equipment of the times. They have also, however, been in the forefront of fleet owners in modernizing and

standardizing their highway vehicles as new and much better designs became available and they are keeping up with present day trends, as indicated by the fact that their purchases for replacement amount to approximately 1,200 vehicles annually.

Co-Ordinated Operations

The Railway Express Agency has its own corporate and operating identity, but it is entirely owned by 70 of the principal railways over which its operations are conducted. The Canadian Pacific Express Company also has a separate corporate and operating identity, although it is entirely owned by its parent railway. The Canadian National Express is operated as the express department of its parent railway, under a general manager, who reports direct to the operating vice-president of the railway.

With this close association between the express companies and the owning railways, it was natural that in planning rail-highway co-ordinated service the railways should take advantage of the experience and knowledge of highway operation and truck management of their subsidiaries. In the last few years, this development

has received special impetus by the efforts of the express companies to provide ancillary services for the benefit of the owning carriers, and at present a large percentage of such co-ordinated operations, both as to road haul and collection and delivery service, are being handled by the express companies. The Railway Express Agency is now the largest individual contractor for railway pick-up and delivery service, while the Canadian express companies are largely engaged in such service, as well as over-the-road hauls for their parent railways.

Railway Express Agency

Railway Express Agency operates a fleet of 12,146 vehicles, of which 640 are trailers, the latter being used in station-to-station work for the railways and for the handling of its own business and also for parking at the platforms of certain large shippers and are collected by tractor after they are loaded. These vehicles belonging to the company are operated at approximately 1,800 points throughout the country. Pickup and delivery for express shipments is given at more than 5,000 points in the United States.

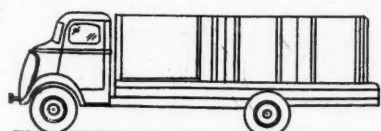
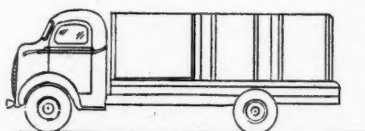
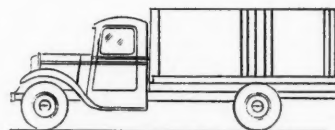
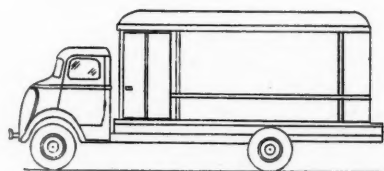
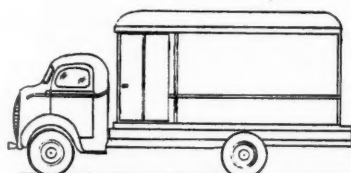
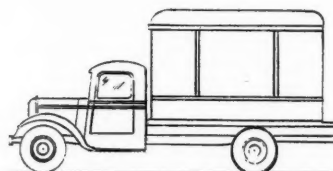
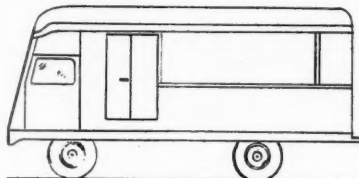
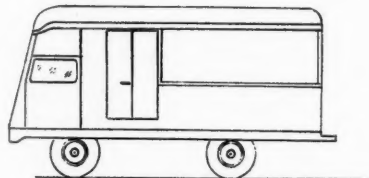
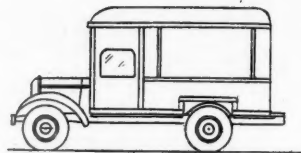
This fleet represents an increase in ownership of 2,500 vehicles since 1930, when only 9,647 vehicles were owned. Two factors are involved in this increased ownership. The Railway Express Agency now operates its own trucks at many points where such service was contracted for in 1930, and the company has also added to its fleet materially to take care of the numerous services it performs for railways, apart from the express business.

Standardizing Equipment

The Railway Express Agency buys all standard makes of trucks, tires and accessories, and, during the course of the years while the fleet was being built up, a wide variety of vehicles, including a large number of electric trucks, was accumulated. When the modernization of the fleet began some years ago, the problem was encountered of standardization of equipment, as opposed to adaptation of the vehicle to some particular or unusual job. The solution was found in a compromise arrangement which involved the development of 10 different types of trucks which are now standard in the entire fleet. This standardization has been so successful that it is now possible to buy parts and materials at a reduction of as much as 30 per cent in many instances, under prices paid when smaller quantities were purchased to suit the much wider varieties of trucks.

One of the principal points in the program was the shortening of the wheel bases for greater maneuverability in crowded city streets, while at the same time increasing rather than sacrificing cubic capacity. For this purpose, the Railway Express pioneered in the cab-over-engine design for light trucks. For example, the former $3\frac{1}{2}$ ton trucks had a 186 in. wheel base, as compared with 138 in. for the present trucks, which also have a greater cubic capacity. It also pioneered in the use of aluminum paint to lighten the interiors of its trucks and for exterior roof paint. After the present all-steel body construction was adopted as standard, the costs of body repairs took a sharp decline, and only a few small body shops are now operated, as compared with the previous large number.

**The Railway Express Agency Has
Concentrated on Ten Standard Types**



One of the Standard Truck
Types of the Railway
Express Agency



Also, stress was laid previously on a high floor level to meet what was supposed to be the standard platform height, but investigation developed that the platforms from which express is loaded vary so much in height that operating convenience rather than a supposed "standard" platform height should be considered. Accordingly, the floor level on all the standard designs has been lowered for easier loading and unloading. In general, covered bodies are used to prevent pilferage and damage to lading.

Another feature of the standardization campaign was the design of trucks so that the driver is with his load, and does not have to contend with the time wasting tail-

gate loading and unloading. Most of the packages now move through side doors instead of over the tail-gate, with an accompanying saving in time and effort. Roll-out motors have been adopted to increase the availability of the vehicles for service. Spare motors are available at several points and the transfer takes only a few minutes, so that the vehicle is kept in practically continuous service.

Maintenance Practices

For operating purposes, the United States is divided into four grand divisions, each with a vice-president in



Many Trucks Are Used by the Air Express Division of the Railway Express Agency



Cab-Over-Engine Units Are Much Used by the Canadian Pacific Express

charge. Each vice-president has a superintendent of motor vehicles on his staff who looks after truck maintenance and supervises the selection and training of drivers. However, all general maintenance policies emanate from the office of the general superintendent of motor vehicle equipment in New York.

The Railway Express Agency has 136 garage organizations scattered about the country, and at the other points garage space is rented and maintenance is supervised by traveling equipment inspectors. This field force, started in a limited territory some years ago is now countrywide in its scope and takes care of maintenance at all outside points where express garages are not situated. The largest single maintenance group is at New York, where eight garage organizations are maintained. All but the central garage are stations for service rather than repairs, but the main garage and shops occupy several floors of a large building, and include more than 50,000 sq. ft. of floor space. The efficiency of the maintenance is indicated by the fact that in New York and in Chicago, many express vehicles are used on double and

triple shifts, the 24 hr. a day vehicles being taken in at intervals for servicing and supplanted by others.

Accessorial Motor Truck Operations

The Railway Express Agency performs pickup and delivery or station-to-station transfer service for one or more railroads at approximately 1,200 points throughout the United States. Some of the more important operations of this character are at Boston, New York, Buffalo, Atlanta, Chattanooga, Memphis, Toledo, Indianapolis, Milwaukee, Davenport-Moline-Rock Island, Omaha, Tulsa, Oklahoma City, Denver, Pueblo, San Diego and Los Angeles.

These contract operations are not handled by specially assigned truck equipment but are co-ordinated with express operations wherever possible to permit both jobs to be done with a minimum number of vehicles. At the larger operations a certain number of vehicles are ordinarily employed exclusively in freight service but these are supplemented by vehicles which handle both express and freight. Co-ordination is especially complete with respect to hauls to and from neighborhoods outside the central business and industrial district.

Because of these co-ordinations, it is not possible to give the exact number of vehicles employed in freight service in any case. However, it may be stated that at Denver and Omaha, two points where the Agency is the exclusive pickup and delivery contractor for all the railroads, the average daily equipment requirements for l. c. l. freight pickup and delivery are over 40 trucks each. Over-the-road truck routes are also operated for railroads by the Express Agency, hauling l. c. l. freight, mail, baggage, etc. These are too numerous to list individually, but generally they are operated in substitution for passenger or freight train service in thinly populated areas.

Another important trucking service operated for railroads by the Express Agency is in connection with the pickup, delivery and transfer of passengers' checked baggage. The Agency performs this service at New York, Philadelphia, Baltimore, Washington, Cincinnati, Cleveland, Omaha, Des Moines and hundreds of smaller places. Additional accessorial services in which the Agency is engaged include intracity hauling of U. S. and railroad mail and supplies, delivery of milk and



Car to Truck Cartage Service Is Provided by the Canadian Pacific



One of the C. P. Trucks Used in Transfer Service

cream shipments, delivery of automobiles from freight cars to dealers, and parcel delivery service for merchants.

Canadian Pacific Express

The Canadian Pacific Express Company, while having its own president and other general officers and staff, works closely with the parent railway, and more particularly so since it has been performing cartage operations of various sorts for the railway, beginning on March 1, 1937. This company operates a fleet of 714 motor vehicles, which consists of 405 trucks and tractors and 23 trailers used exclusively in express service and 256 trucks and tractors and 30 trailers used exclusively in railway cartage work. These latter operations include pickup and delivery, station-to-station transfers and over-the-road haulage. This fleet includes all standard makes of trucks, and tire purchases are also made from all of the larger tire companies.

The Cartage Services

To meet the competition of unregulated transportation on the highways, the Canadian Pacific established competitive rates, increased the speed of freight trains, undertook highway transport work and extended free pickup and delivery service. While improvement in equipment, power, etc., enabled the railway company to reduce materially the running time of freight trains between terminals it is essential that at the commencement and completion of the rail haul there should be modern and rapid methods of performing pickup and delivery service. The express company was originally organized to perform a complete transportation service for picking up merchandise in shippers' premises and delivering it into the premises of consignees. In building up its business and shipper goodwill, it found pickup and delivery service performed by its own employees one of its greatest assets and most important in securing traffic. Express vehiclemen are not just truck drivers, but are

transportation salesmen selected and trained accordingly and express representatives have acquired valuable experience in producing efficient and economical vehicle service to secure and deliver merchandise.

This is what the railway wanted and the express company welcomed the opportunity to undertake freight cartage work, especially as improved freight service had naturally resulted in the diversion of considerable traffic from express to freight. Following a joint survey by railway and express representatives, the railway entered into an agreement whereby the express company agreed to undertake freight cartage work at certain points at prices then being paid to cartage contractors, and in connection with which the contractors were demanding increases.

The Express Company began freight cartage work on March 1, 1937, and is now performing collection and delivery service at the following points:

Toronto, Ont.	Saint John, N. B.	Digby, N. S.
Montreal, Que.	St. Huacinthe, Que.	Yarmouth, N. S.
Ottawa, Ont.	Three Rivers, Que.	Kentville, N. S.
London, Ont.	Guelph, Ont.	Windsor, N. S.
Sherbrooke, Que.	Joliette, Que.	Fredericton, N. B.
Peterboro, Ont.	Chatham, Ont.	St. Stephen, N. B.
Lethbridge, Alta.	St. Jerome, Que.	Edmundston, N. B.
Sault Ste. Marie, Ont.	St. Thomas, Ont.	
Halifax, N. S.	Woodstock, Ont.	

The Express Company also operates on account of the railway, highway service between Montreal and St. Jerome, Que., between Guelph and Galt, Ont., between Medonte and Midland, Ont., between Digby and Upper Clements, N. S., between Windsor and Mount Uniacke, N. S., between Kentville and Windsor, N. S., and between Brockville and Smiths Falls, Ont.

The rail-highway co-ordination development in Nova Scotia and New Brunswick was inaugurated only last year, but it has already assumed considerable proportions. It represents a significant and interesting attempt to have the over-the-road trucks deliver freight directly to receivers without having it pass over the station platform.

It was felt that vehicles best adapted to freight cartage work should be heavier than would be efficient or eco-

nomical for express work, and that peak load requirements for pick-up and delivery in both express and freight service come at practically the same hours each day and express and freight vehicles operate to and from different terminals. Accordingly, the same vehicles are not used to handle both express and freight at larger terminals.

The cartage trucks vary as to make and capacity, but $2\frac{1}{2}$ to 3 ton capacity predominate. A number of trucks are equipped with closed bodies to afford protection to valuable traffic such as tobacco and silk, but generally the bodies are of the platform type with solid sides 42 in. high. For handling heavy transfer loads between stations, tractors and 20 ft. semi-trailers having a capacity of 8 to 15 tons are used. All vehicles are equipped with pneumatic tires with duals on the rear, and a considerable number of trucks are of the cab-over-engine type. There is a distinct advantage in operating trucks of this type with short wheelbase, in congested street traffic areas and where curb parking space is limited; there is also an advantage in connection with garage storage space. The trucks are lettered "Canadian Pacific" in gold leaf on the side panels and carry the Canadian Pacific freight crest on cab doors.

Cartage vehiclemen are uniformed so as to be readily identified when they present themselves to accept freight from shippers. The cap badge carries the name "Canadian Pacific" and the freight department crest. As far as the general public is concerned, the whole cartage setup is tied directly to the Canadian Pacific freight service, thus giving a distinct advantage from an advertising standpoint in performing freight pickup and delivery service with modern company-owned motor truck equipment uniformly lettered and painted.

Each cartage vehicleman is now an active solicitor for freight traffic. Express and cartage vehiclemen exchange information as to traffic moving and assist each other in the development of traffic for both services. Express and freight solicitors are encouraged to become acquainted with vehiclemen assigned to routes in their districts to build up confidence between solicitors and vehiclemen and to facilitate the solution of traffic problems. Joint meetings are held for this purpose where

problems are discussed frankly and enthusiastically, and there is close co-operation between the freight staffs and the freight cartage service. Complaints as to cartage service have been eliminated and the public appreciates and has responded to the new service.

Operation and Maintenance

To accommodate the large number of motor vehicles now operating in Toronto and Montreal in express and cartage service, new modern garages have been erected. The Montreal garage has a capacity for more than 160 vehicles and the Toronto garage for over 200. In each case, the garage is located close to the freight sheds, reducing to a minimum slow, dead mileage through heavy street traffic. These new garages are equipped with the most modern arrangements for taking care of all servicing and repair work. They are also equipped with lunch rooms, showers, and locker rooms for the employees.

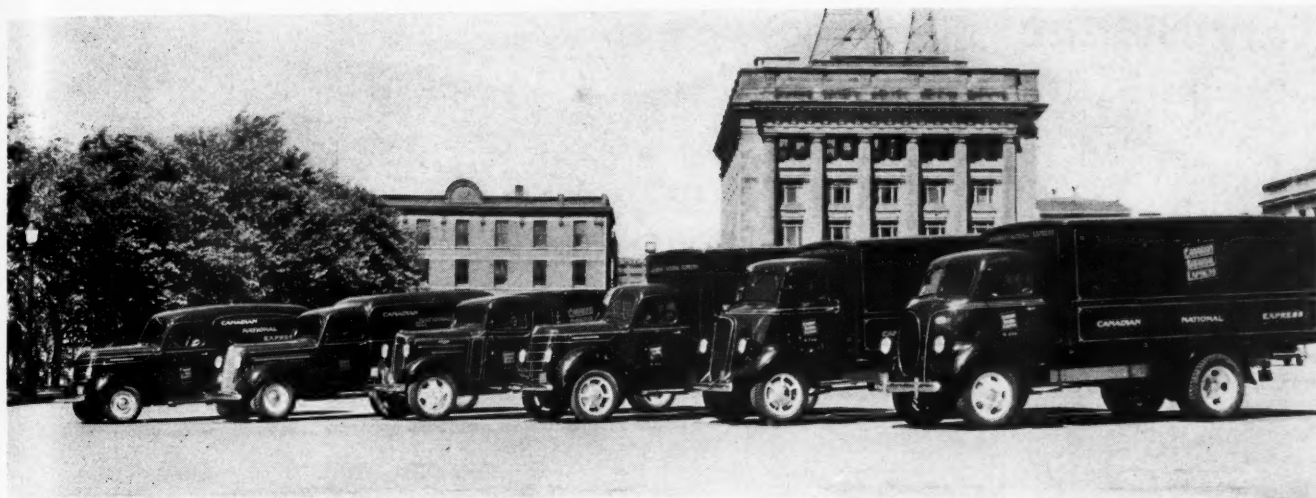
A complete cost history is kept of every cartage department truck, and when a truck goes into service, it is given a number which it keeps until it is disposed of. This number and other essential information, such as the make, capacity, tire number, etc., are entered on a card and on all subsequent monthly reports. A daily ticket is made out for each truck, giving the mileage, fuel and oil used, repairs made, etc. At the end of each month, the information from these daily tickets is transferred to a consolidated motor truck report, one copy of which is kept at the local office, while others go to the division office and to the general superintendent. A recapitulation of motor truck reports is sent to the office of the general manager, where a complete history of each truck is kept and where an analysis of truck operations is made for study and possible further improvement.

Canadian National Express

The set-up of the express department of the Canadian National is quite different than that of the Railway Ex-



Modern Equipment Gives Efficiency to Canadian National Express Operations



The Standard Types of Vehicles Used by the Canadian National Express

press Agency or the Canadian Pacific Express Company, both of which, though wholly-owned by the railways, have their own executives and separate operating organizations. The express department of the C. N., on the contrary, is operated as a railway department, under the jurisdiction of a general manager, who reports direct to the operating vice-president of the railway.

The C. N. owns 371 motor trucks and 7 trailers, used entirely in express service. A large majority of the trucks, 227 in all, are of $1\frac{1}{2}$ to $1\frac{3}{4}$ tons rated capacity; 79 are of from $\frac{1}{2}$ to $1\frac{1}{4}$ tons; 61 are of 2 tons or more, and the other 4 trucks are for miscellaneous special services. The C. N. has 15 types of trucks in service including all the standard makes and the replacements in the fleet amount to somewhat over 10 per cent of the total, or about 38 per annum. In 1939, however, because of the expansion in co-ordinated services for the parent railway and other factors, 46 new trucks were bought. The Canadian National Express will replace 45 horse-drawn vehicles with motor trucks during 1940, thus completing its vehicle motorization, except in a few small towns.

Maintenance and Superintendence

The fleet of trucks is well maintained, major repairs being made to the express department's own garages at Montreal, Toronto and Winnipeg. These shops handle overhauling and painting; all other minor maintenance is taken care of locally under contract with various dealers and service stations. All standard makes of tires are purchased for use on the trucks.

The express department employs approximately 400 vehicle men as drivers and helpers, of which 50 are extra men, paid on an hourly basis, and called as needed. In the cities, the operation of the local truck fleet is controlled by vehicle service dispatchers, and at the smaller stations this duty is assigned to the express agent. In view of the severe winters and difficult driving conditions, C. N. express drivers are selected with great care. They are required to pass rigid physical examinations and comprehensive driving tests before being accepted for service. As a result of this selection and the equally careful operation and maintenance of the fleet, the percentage of service from all units is high and a relatively smaller fleet of trucks is required than would be necessary under less efficient methods.

The express department operates a large number of intercity over-the-road express services, supplementary

to train service, or between points where train service is not available. Of these routes, 22 are in Ontario, and 7 others are between towns in five other provinces between Nova Scotia and British Columbia. The C. N. operates 11 of these routes with its own vehicles and contracts with local truckers on the rest of the routes.

The new trans-Canada air line is under the executive charge of the president of the Canadian National. Operations began last year, but the first extended transcontinental flights on regular schedule will begin this spring. The express department is already engaged in air express service, but it is expected that this year will witness a material expansion of this service.

Co-Ordinated Railway Operations

Beginning in February, 1938, the express department began taking over collection and delivery service for the railway at various cities. Such service is now handled at Montreal, Que., and St. Hyacinthe, and at London, Ont., Brantford and Guelph. A fleet of 144 vehicles has been purchased for exclusive use in such service and consists of 123 trucks, 3 tractors and 18 trailers. This fleet consists of larger units than those employed exclusively in freight service, 117 of the vehicles having rated capacities of 2 tons or over. The personnel of the cartage fleet includes 72 regular vehicle men and 88 extra drivers and helpers. The methods of selecting men, superintendence and maintenance are identical to those used in express service. These cartage services will be completely motorized in 1940 by the replacement of 28 horse-drawn vehicles with motor trucks.

In addition to the collection and delivery service, the express department has recently taken over the handling of l. c. l. freight by motor truck for the railway between Moncton, N. B., and several other towns in the same province. Combination freight and truck routes are also operated under contract between several other points in Ontario.

THE LONG-PLANNED ELECTRIC RAPID TRANSIT LINE connecting four of the most important railroad stations in Berlin, Germany, has been opened, according to the American commercial attache. Although it is but two miles in length, the shuttle line is an important addition to the metropolitan rapid transit system and a vital link for passenger interchange between the main line terminals. It is reported that the new line cost 170,000,000 Reichmarks (\$68,000,000) and required four years to build.

Katy Begins Co-Ordinated Service

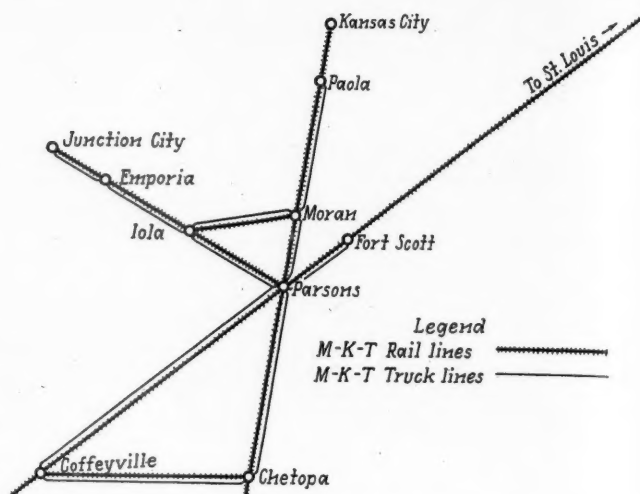
ON December 4, the Missouri-Kansas-Texas began a co-ordinated rail-highway service in southeastern Kansas by the establishment of several truck routes radiating from Parsons, Kan. In effect, this is a trial installation, which, if it proves successful in its smaller area, will be developed in other territories throughout the system. The new service permits first morning delivery to each of the 51 points served on shipments from Kansas City and first morning delivery to the majority of these points on shipments from St. Louis. As shown on the accompanying map, this includes a considerable area along the railway's main line and branches. There was no doubt as to the desire for the new service among the merchants, shippers and receivers in the territory involved, as more than 98 per cent of these people signed petitions supporting the application of the railway to the Kansas Corporation Commission.

Break-Bulk Points Established

Break-bulk points have been established at Parsons, Kan., Paola and Fort Scott, and the traffic involved in the new service comprises 92 per cent of the total merchandise handled by the M-K-T in Kansas. Freight moving from Kansas City for points south and west of Parsons by rail is fanned out by truck from Parsons. Merchandise for points north of Parsons is handled by rail to Paola, and distributed along the line to Parsons by truck. Merchandise shipments from St. Louis to points between Fort Scott and Parsons are handled by rail to Fort Scott and truck beyond, while St. Louis shipments destined to points on the four lines radiating out of Parsons are unloaded at Parsons for truck distribution on each of these four lines.

Highway Equipment and Routes

The equipment used in this service consists of four International tractor-trailer units and one International



The Katy's Co-Ordinated Routes in Kansas

truck. All of the units have curtained refrigerator space for handling l. c. l. perishables. An 8-ton tractor-trailer unit is operated on the heaviest run from Parsons to Emporia and return. The light 4-ton truck makes a turn-around run between Emporia and Junction City. Two of the three 6-ton tractor-trailer units make daily round trips between Paola and Parsons, and between Fort Scott and Parsons. The third 6-ton tractor-trailer unit makes two round trips daily on the triangle from Parsons to Chetopa, thence to Coffeyville and return direct to Parsons. The truck operation is handled for the railway under contract by the Columbia Terminals Company, although the equipment is identified exclusively as "Katy" service.

The M-K-T, which was one of the pioneers in collection and delivery service for l. c. l. traffic, is continuing such service in the area involved as before. The new over-the-road routes are intended as an auxiliary service to save time for the shippers and receivers and to permit a more flexible operation in getting l. c. l. freight to local stations. The new service is confined to such points in Southeastern Kansas as are served by the lines of the



The Kansas Truck Lines Are Protected by the Latest Equipment

parent railway and does not include any stations not on the line of the M-K-T.

Safety on the Highways

IN a complete revision of its safety regulations for motor carriers, which became effective on January 1, 1940, the Interstate Commerce Commission has taken cognizance of the human element in safe driving, as well as many mechanical details. The qualifications for drivers, the standard equipment for buses and trucks, and special equipment that will be mandatory on all highway vehicles purchased after January 1, 1940, are included in this comprehensive summary.

Drivers' Qualifications

A complete outline of recommended practices for physical examinations of drivers, together with suggested forms, is given in the booklet. A driver must be not less than 21 years of age, able to read and write English, and have unimpaired sight and hearing. He must also have at least a year's experience, covering all four seasons, in driving and have sufficient particular training with the type of commercial vehicle he is hired to drive to satisfy safety inspectors and others of his competency.

Corrective eyeglasses are permitted, but any functional disease likely to interfere with safe driving will debar a man from becoming a driver, as will addiction to drugs or the excessive use of alcoholic liquor. Rule 2.05 corresponds to Rule G on the railways and positively forbids drivers to go on duty while under the influence of liquor or to drink alcoholic liquors while on duty. The rules covering speed call for strict adherence to local regulations in all cases and for a reduction in the normal speed when driving at night.

Every bus, truck or tractor must carry a complete list of emergency equipment, including a fire extinguisher, extra electric bulbs and fuses, three flares, three fusees, and at least two red cloth flags with standards. Each bus must also carry a first aid kit and a hand ax.

Precautionary Measures

The stowing and securing of loads on trucks and baggage on buses is also covered in detail, while a space interval is required between each truck except when passing, each bus and every truck carrying inflammable or dangerous freight must stop at railroad crossings, and all buses must also stop at drawbridges. If this ruling is properly carried out it should reduce the disproportionate number of gasoline trucks involved in grade crossing accidents. The rules also provide precautionary measures for making turns, passing other vehicles and emergency parking. Several pages are devoted to the proper road-lamp equipment, with illustrative diagrams, and parts and accessories necessary for safe operation are outlined in great detail. Under the new rules, every motor carrier must report to the Commission every accident where injury or death to any person results, or property damage amounting to \$25 or more occurs. Unlike the reports on railroad accidents, however, motor carrier accident reports will not be available to the public, being kept as confidential in the archives of the Commission. The booklet also reviews the various hours of service rulings of the Commission and closes with the recommendation that all motor vehicles be given periodic inspection.

Rock Island Completes its "Samson of the Cimarron"

(Continued from page 207)

earth bridge approach embankments. The west embankment, in particular, required special treatment as it extends approximately 800 ft. across the flood plain of the river. The protective system employed, which is shown in detail in one of the accompanying illustrations, was carried upstream from the ends of the bridge rather than along the embankments to prevent cross flow through the bridge opening, with the additional tendency to scour which this would promote.

Rapid Construction

Of equal interest with the magnitude and special features of the work described in the foregoing, is the unusual speed with which the entire project was carried out. The 3,000,000 cu. yd. of grading and all masonry construction were completed in approximately six months time, and the bridge superstructure was erected in approximately 85 days.

An outstanding feature of the work is the fact that since being placed in operation, the new line, in spite of the unusually heavy cuts and fills throughout almost its entire length, exhibited little settlement or slippage of the soil, so that within an unusually short time it was possible to handle all track maintenance with normal section forces similar to those employed on the adjoining sections of old line. The value of this reduction of excess maintenance following construction is best appreciated from comparisons with other similar construction projects of the past, where it has not been unknown for maintenance charges to be as much as 50 to 100 per cent above normal for a number of years following their completion.

The entire project was planned and carried out under the general direction of J. D. Farrington, chief operating officer of the road, and under the immediate direction of Robert H. Ford, chief engineer, assisted in track matters by W. H. Hillis, at the time, engineer maintenance of way, but now assistant chief operating officer, and on bridge matters by I. L. Simmons, bridge engineer. The new line was located by A. P. Briggs, locating engineer of the railway, collaborating with James E. Erskine, hydraulic engineer, on problems effecting stream flow, soil erosion, etc., and J. G. Wishart, principal assistant engineer, who had general supervision over all plans. W. B. Thockmorton, resident engineer, was in direct charge of field operations.

All of the grading on the line change was executed under contract by Oran Speer, Alvord, Tex. All of the steel for the bridge was fabricated by the American Bridge Company, while the construction of the piers and abutments and the erection of the superstructure were carried out by the Kansas City Bridge Company, Kansas City, Mo.



Commuters' Trains of the Long Island at Oyster Bay

NEWS

"Political" Rates Are Postponed

South-North rate reductions
put off from March 1 to April 1
as opposition mounts

The Interstate Commerce Commission this week postponed from March 1 to April 1 the effective date of its order in the so-called Southern Governors' rate case wherein its five-to-four decision of last November gave the South a victory in principle by ordering reductions of South-North interterritorial rates on a limited number of commodities to the intraterritorial basis within the North. The commission had received several petitions seeking the postponement and a reopening of the proceeding which was docketed as No. 27746, State of Alabama, et al. v. New York Central Railroad Company, et al. The decision, promulgated under the fire of Chairman Eastman's sharply-worded dissent which called the controversy a "political issue," was reviewed in the *Railway Age* of December 9, 1939, page 889.

Among the petitioners seeking postponement of the order's effective date were the Northern railroads whose request was noted in the *Railway Age* of January 13; this week these Northern lines followed through with a comprehensive brief in support of their plea for a reconsideration and reargument of the proceeding. Also received by the commission were similar petitions filed on behalf of the five states of Illinois, Indiana, Michigan, Ohio and Wisconsin, and by a group of 18 Central-Territory intervenors, mainly chambers of commerce in those same states and in Missouri.

The decision to file the petition on behalf of the five aforementioned states was made at a meeting in Chicago on January 18. Following that meeting, the attorney general of Illinois appointed Luther M. Walter, a trustee of the Chicago Great Western, a special assistant attorney general to handle the case. Mr. Walter acted for the Northern states in the hearing before the Commission. The states' petition particularly emphasized an alleged failure of the commission to develop data to show the relative costs of handling freight in the South and challenged the decision's contention that "the cost of transporting the articles named in the complaint from producing points in the South into the North, compared with that of transporting like articles within the North, does not justify the maintenance thereon of higher levels of

rates than are applicable on like articles within the North."

The petition also alleges that the evidence of record is wholly insufficient as a basis for the findings made by the commission. Asserting that the decision reverses the findings in previous cases without a showing of sufficient changes in the conditions found of record at the time of the earlier decisions, the petitioners offered to prove that there has been no change in the conditions found in the decisions in the former cases.

"From a review of this entire proceeding," the petition concluded, "the evidence introduced, the arguments made, the precedents overruled and the report and decision of the commission, one cannot escape the conviction that the commission has prescribed rates and rate relationships based not primarily upon appropriate rate making factors but really, rather, upon the economic effects which the prescriptions are calculated and expected to produce, a consideration which is without justification or warrant in law. Whether the new interterritorial rate structure which is being erected will be effectual in solving the economic problems of the South is extremely doubtful. The record indicates that there are forces far greater than the differences in rate levels which are at work on the industrial development of the South and that despite any alleged rate handicaps, Southern industry is in a prosperous and flourishing condition and gaining at the expense of Northern competitors."

The petition of the abovementioned Central Territory intervenors set forth arguments in support of such contentions as: The commission erred in that its decision goes beyond the issues in providing lower interterritorial rates than the destination level; it erred in evaluating the evidence as to competition in connection with specific commodities treated and as to the cost of transporting such commodities; and the evidence with respect to the economic situation is "insufficient and incompetent" to support the conclusions reached.

Substitution of Cotton

Examiner Myron Witters has recommended in a proposed report that the Interstate Commerce Commission find justified a proposed rule in the cotton transit tariff which would authorize the substitution of truck, wagon, boat or barge cotton for uncompressed rail cotton, originating within 50 miles of the transit point, at points in the Southwest, except at Louisiana and Texas ports. With such a finding the examiner would discontinue the proceeding which is docketed as I. & S. No. 4646.

Argue Eastern Fares at I. C. C.

Aronson supports the 2.5-cent
experiment, Webber opposes
—Bench asks questions

The application of the Eastern railroads with the exception of the Baltimore & Ohio to continue their 2.5-cents-per-mile basic coach fare in effect beyond the January 24 expiration date was argued before the Interstate Commerce Commission on January 22. Jacob Aronson, vice-president in charge of law of the New York Central, argued the case on behalf of the petitioning Eastern carriers, while C. R. Webber, general attorney for the Baltimore & Ohio, opposed the extension from January 24 to October 31.

As pointed out in the *Railway Age* for January 13, page 130, the issue involved in the case is whether the commission will grant the petition of the Eastern carriers, other than the B. & O., for an extension of the 18-months' experimental period for testing the effect of the 2.5 cents basic coach rate which would expire on January 24, to October 31. On December 11, the commission extended the period for two additional months to March 24. If the commission accepts the recommendation of the B. & O. and refuses to grant the extension, the basic coach rate will revert to the two-cents-a-mile maximum in Eastern territory. The carriers, both in their petition and at the hearing held on January 4 and 5, took the position that additional time was necessary for further experimentation; and that because of the World's Fairs in New York and San Francisco the results obtained from the 2.5 cents maximum rate should not be considered as conclusive under normal conditions.

Mr. Aronson led off for the petitioning carriers, asserting that "anything we can do to increase our traffic is justified whether it complicates things statistically or not." He was referring to the criticism leveled at the carriers that the instituting of the special World's Fair rates and the sliding scale had confused the statistical picture and had prevented the carriers from presenting any valid factual evidence to the commission as to how the 2.5 cent rates had operated as compared with the basic two-cent coach rate. Mr. Aronson asked the commission to grant the Eastern carriers the extension they asked for because of the fact that due to the two Fairs which had been in progress during the past year, they had had no actual experience with the

results obtained from the so-called sliding scale rates which have been in effect in Eastern territory on round trips since the middle of last year.

Commissioner Porter spoke up to ask, "If the 1.5-cent rate is good for a round trip, why isn't it good for a one-way trip?" "Americans still like to get bargains," answered Mr. Aronson. "We want people to go both ways and believe that we should give them an added incentive to make the round trip."

The New York Central vice-president characterized the sliding scale as "a revolutionary experiment and one that does contain outstanding elements of success." Asked by Commissioner Porter why the Eastern roads didn't try to do something to regain the short-haul business which they have lost to buses and the private motor car, Mr. Aronson replied, "You wouldn't get some passengers if you gave them the trip free." He went on to contend that there were elements other than the monetary to influence the mode of transportation that passengers chose for short trip. One of these, he said, is the fact that in driving one's car, you have it for your own use after you have arrived at your destination. In many cases, he continued, no matter how low the rail rate was, people would continue to drive themselves. He then denied that the proposition was always true that the lower the passenger fare was reduced, the more passengers the railroad would get.

At this point Chairman Eastman remarked that the experiments conducted by the carriers in passenger fares to date had "proved nothing." He thought the carriers should have kept the 2.5 cent rate in long enough to find out whether or not it was satisfactory rather than continuing the 2.5 rate and also instituting special World's Fair rates and the sliding scale rates at the same time.

Mr. Porter continued the questioning from the bench by asking, "Doesn't it look inconsistent to have the highest fare for the shortest distance?"

"No, it doesn't," shot back Mr. Aronson. The New York Central attorney does not question either the sincerity or the intelligence of the B. & O. in its opposition in this case, but he asked the commission to remember that that road handles only five per cent of the entire rail passenger traffic in the Eastern territory. He did not believe that the other roads should be forced to give in to the desires of a road which shares such a small percentage of the passenger business.

He closed his 60-minute argument by telling the commission that "If we ever had a case where merchandising genius should be given a chance to try out its ability, this is the case."

Mr. Webber had hardly begun his opening remarks when Commissioner Rogers came right to the point and asked, "Is there any reason why the B. & O. can't put into effect a two-cent rate?"

"No, there isn't any legal reason," answered the B. & O. attorney, but his answer gave the impression that there might be other equally cogent reasons for hesitating to do so. He went on to say that his road was a member of passenger associa-

President Reappoints Commissioner Miller

President Roosevelt, on January 25, sent to the Senate for confirmation the name of Interstate Commission Commissioner Carroll Miller for re-appointment for a term ending December 31, 1946. Commissioner Miller's present term expired on December 31, 1939, but he continued to serve under a provision of the law which permits a commissioner to remain in office until he is re-appointed or his successor qualifies.

tions and would not like to do anything that was opposed by the majority of the memberships.

Asked by Commissioner Rogers as to whether he thought the two-cent rate would be suspended by the commission, he believed it would be temporarily, but he did not think the other Eastern roads could prove a case that that rate was unreasonably low and non-compensatory. In other words, he felt that were the B. & O. to decide to publish a two-cent rate, it could justify such a rate before the commission.

Turning to the question of an extension of time for further testing of the sliding scale rate, Mr. Webber asked, "How can you have a better test than you have had already? What has it proved Nothing." He also charged that the sliding scale was placed in effect because the roads were not satisfied with the results obtained from the 2.5-cents fare. The sliding scale, he continued, doesn't mean anything to the B. & O. and most of the other Eastern carriers. He also asserted that there has been a continuous loss from passenger operations since the 2.5-cents fare has been in effect. At the same time, he pointed out, revenues from bus transportation have increased.

Appearing briefly in rebuttal, Mr. Aronson said that high rates don't determine how much business the buses get. He thought the buses had increased their rates at the same time that the carriers had, but denied that his company's interest in Central Greyhound Lines was sufficient to cause it to tone down its competition with Central Greyhound on the assumption that it would get the passengers either coming or going, i. e., using either the bus or the train. Traffic officers, he concluded, feel it would be "unfortunate to change the basic fare rate until the World's Fairs are over this year."

A brief argument urging the commission to adopt the principle of postalized fares was made by John W. Hastings, ex-New York state senator, who also asked it to deny the carrier's petition.

Unions Out for 40 Cents-an-Hour Minimum Wage

Railroad labor is preparing to fight for a 40-cents-an-hour minimum wage in the railroad industry when the matter comes up for hearing on February 14 before the Railroad Industry Committee appointed under the provisions of the Fair Labor Standards Act. As pointed out in last

week's issue, the Railroad Industry Committee, under the chairmanship of President Frank P. Graham, of the University of North Carolina, consists of three other representatives of the "public," four representatives of railway labor and four representatives of management; it is authorized under the Fair Labor Standards Act to recommend a minimum wage up to 40 cents per hour, the present general minimum provided for in the act being 30 cents. The railroads are expected to contend for continued application to the railroad industry of the general 30-cent minimum which, by the terms of the act, will be increased to 40 cents in 1945.

Meanwhile, the Wages and Hour Division of the U. S. Department of Labor announced this week that George E. Osborne, a member of the law faculty of Leland Stanford University, Palo Alto, Cal., has been appointed a "public" member of the Railroad Industry Committee, succeeding Oscar K. Cushing, San Francisco attorney, who resigned.

The unions' determination to fight for the 40-cent minimum is set forth in an article appearing in the January 23 issue of "Labor." There are given opinions of the leaders of the employees involved, which leaders are agreed that a 40-cent minimum wage "will not cause the curtailment of a single job, since the railroads are down to bare skeleton forces now and couldn't get along with less." (In the latter connection the Fair Labor Standards Act stipulates that an industry committee may recommend the highest minimum wage up to the 40-cent limit which will not substantially curtail employment.)

It has been estimated that approximately 100,000 railroad employees are now earning less than 40 cents an hour, and that a minimum wage on that level would cost the railroads approximately \$15,000,000 a year. Breaking down the 100,000 figure, "Labor" reviews estimates of interested union officials who say that 40,000 to 50,000 would be section hands, chiefly in the South and Southwest; 7,000 to 10,000 would be shop laborers; "thousands" would be members of the Brotherhood of Railway Clerks, such as office messengers, machine operators, waybill sorters, porters, janitors, etc.; 7,000 "red caps"; and "thousands" of dining-car employees.

Home Routing of N. Y. C. Cars

W. C. Kendall, chairman of the Car Service Division, Association of American Railroads, has issued a circular modifying existing instructions respecting the home routing of New York Central System cars.

Effective February 1, and until further notice, the circular stipulates, freight cars of the Pittsburgh & Lake Erie and Pittsburgh, McKeesport & Youghiogeny will be at home only on the Pittsburgh & Lake Erie. As of that date, the Boston & Albany, New York Central, Michigan Central, Cleveland, Cincinnati, Chicago & St. Louis, Peoria & Eastern, Indiana Harbor Belt, and Chicago Junction-Chicago River & Indiana will accept empty cars of P. & L. E. and P., McK. & Y. marks only in accordance with home route record rights. Similarly, freight cars of the B. & A., N. Y. C., M. C., Big Four, P. & E. and Cin-

cinnati Northern, will be at home only on the New York Central System Lines. They will be accepted empty by the Pittsburgh & Lake Erie from its connections in accordance with home route record rights only.

Rear End Collision on New York Central

The eastbound "Southwestern Limited" of the New York Central ran into the rear of the "Commodore Vanderbilt" at Wickliffe, Ohio, on January 19, when the latter stopped for brake inspection. Misjudgment of distance was blamed for the accident. According to the engineman, the Southwestern was running five minutes behind the Vanderbilt and slowed down to the approved speed of 35 m.p.h. when a caution signal appeared. When a red signal came into view the brakes were set but the Southwestern struck the Vanderbilt at a speed of about 10 m.p.h.

Time-Limit in Anti-Trust Suit is Extended

The time-limit for filing answers in the government's anti-trust suit against the Association of American Railroads, its officers and directors and 236 member roads has been extended from January 20 to February 12. The complaint, details of which were given in the *Railway Age* for October 28, 1939, page 670, was filed by the Department of Justice, charging that the railroads had refused to cooperate with motor carriers in the establishment of joint through routes and rates.

Katy Seeks Discontinuance of Four Passenger Trains

A petition of the Missouri-Kansas-Texas to discontinue passenger trains Nos. 34 and 37 between Muskogee, Okla., and Osage, and Nos. 25 and 26 between Oklahoma City, Okla., and Parsons, Kan., was taken

under advisement by the Oklahoma Corporation Commission following protests made at a hearing at Oklahoma City on January 16 and 17. C. D. Pantle, auditor of the railroad, testified that the net deficit of operations in Missouri, Oklahoma and Kansas during the first 11 months of 1939 was \$1,571,813. Operating costs of trains Nos. 34 and 37 in 1939 were about \$15,000 in excess of revenues, according to testimony of the railroad.

Federal Judge Raises the Ante in New Jersey Tax Case

Federal Judge Phillip Forman, who on November 2, 1939, issued an injunction restraining the state of New Jersey from collecting more than 60 per cent of its total tax assessments on the railroads for 1934, 1935 and 1936 (reported in the *Railway Age* for November 11, page 767), has modified his order to the extent of permitting the state to collect 70 per cent of its levies for each of the years. Since all carriers in the state, except the Pennsylvania, have withheld at least 40 per cent of total assessments for this period this latest revision makes them liable for payments of a total of \$3,739,293. Reason given for the modification upward was that it would give some relief to the municipalities receiving the additional money and still protect the railroads' interests.

I. C. Reorganizing Booster Club

The Illinois Central is reorganizing its Booster Clubs by changing the name to Service Clubs and revising programs to make the clubs of greater significance to localities. The aims of these clubs are now (1) to meet the needs of business and individuals for adequate and dependable transportation; (2) to give good service; (3) to deserve the confidence and good will of friends and neighbors; (4) to make the railroad a good place to work; (5) to se-

cure equality of opportunity to serve and make a fair profit; and (6) to promote the interests of employees and the Illinois Central.

At the close of 1939 there were some seventy Illinois Central Booster Clubs with a total membership of approximately 15,000 or, roundly, 50 per cent of the railroad's total employment.

Hearings on Road Bill

The House committee on roads began public hearings this week on H.R.7891, a bill introduced by Representative Cartwright, Democrat of Oklahoma, "to assist the states in the improvement of highways." The bill is a substitute for H.R.7695 previously introduced by Mr. Cartwright as noted in the *Railway Age* of January 13, page 142.

Risk Named to House Interstate Commerce Committee

Representative Charles F. Risk, Republican of Rhode Island, has been elected to the House committee on interstate and foreign commerce. He fills the vacancy among minority members created by the death of Representative Carl E. Mapes, while Representative Charles A. Wolverton of New Jersey moves up to Mr. Mapes' former place as ranking minority member. Still to be filled is the vacancy among majority members created by the death of Representative John A. Martin of Colorado.

Would Make Train Wrecking Federal Offense

Representative Walter, Democrat of Pennsylvania, has introduced H. R. 8086 which would make it a crime against the federal government to wreck or attempt to wreck a train engaged in interstate commerce. Any one convicted in connection with a wreck which resulted in the death of any person would be subject to the death penalty or imprisonment for life; others convicted would be subject to a maximum fine of \$10,000 or 20 years imprisonment, or both.

Promotes Safety by Eliminating Grade Crossings

Eight public and 148 private grade crossings were eliminated last year by the Chicago, Burlington & Quincy in cooperation with municipalities in an effort to reduce the chances for grade crossing accidents, according to P. F. Buckle, superintendent of safety of the Burlington, in an address before the Western Society of Engineers on January 22. To accomplish this task, a complete survey was first made, through division superintendents and other local representatives, to determine which crossings could be eliminated without inconvenience to the public. After a definite plan of elimination was formulated, it was presented to the particular locality for approval.

Bryson Succeeds Crabbe as Washington Traffic Club President

George L. Bryson, district freight and passenger agent for the Central Vermont, was elected president of the Traffic Club of Washington, D. C., at the annual meet-

I. C. C. Refuses to Suspend Forwarder Competitive Rates

Tariffs carrying reduced Official-territory class and commodity rates published by the Pennsylvania and railroads associated with it in an effort to meet the competition of forwarding companies became effective on January 22, the Interstate Commerce Commission having announced on the 19th that it had denied requests for suspension. The commission's announcement, signed by Acting Secretary George W. Laird, did say, however, that the regulatory body would upon its own motion institute an investigation into the lawfulness of the rates, rules, regulations and practices covered by the tariff in question.

The tariff carrying the rates proposed by the P. R. R. and its associates was filed by Agent W. S. Curlett, pursuant to temporary fourth-section relief granted by the commission, as noted in the *Railway Age* of November 11, 1939, page 759. Later on, similar relief was obtained by other Eastern roads, including the so-called Van Sweringen lines,

which, along with the New York Central, asked the commission to suspend the Curlett tariff. Numerous other requests for suspension were received by the commission.

As pointed out in the above-mentioned issue of last November 11, where the fourth-section application of the P. R. R. and its associates was reviewed, the applicant railroads asserted, among other arguments, that recent improvements have made their I.C.C. service not inferior to that of the forwarders, thus making it clear that losses of traffic to the latter "is primarily due to their maintenance of lower rates." Meanwhile, the forwarders remain free to reduce their rates without notice to meet the schedules published by the railroads—the commission, having found in the Freight Forwarding Investigation and in the Acme case that forwarders were left unregulated by the Interstate Commerce Act, has ordered forwarder tariffs stricken from its files.

ing held in that city on January 18. He succeeds Floyd F. Crabbe, general agent for the Chicago, Burlington & Quincy.

Other officers elected are: First vice-president, Otis E. Shaw, general agent, A. H. Bull & Company; second vice-president, Frank E. Greenip, traffic manager, U. S. Navy Department; and secretary-treasurer, Rowland E. Dobbins, traffic auditor, Federal Crop Insurance Corporation, who was re-elected. These new officers will assume their duties after the club's annual banquet, to be held on February 8, as noted in last week's issue.

Bills to Amend Unemployment Insurance and Retirement Acts

Representative Robsion, Republican of Kentucky, has introduced H. R. 8025 "to prohibit the transfer of employee contributions under the Railroad Unemployment Insurance Act and for other purposes." The bill is identical with S. 3104, previously introduced in the Senate by Senator Chandler, Democrat of Kentucky, as noted in last week's issue, page 179.

Another bill dealing with the transfer of railway employee contributions from state funds to the Railroad Unemployment Insurance Fund is H. R. 7986, introduced in the House by Representative Bates, Democrat of Kentucky; it would amend the Railroad Unemployment Insurance Act "so as to place the various states on an equal basis with respect to contributions of employees."

Senator Johnson, Democrat of Colorado, has introduced S. 3135, which would amend the Railroad Retirement Act, liberalizing sections which set forth the basis for calculating years of service.

Senator McKellar, Democrat of Tennessee, has introduced S. 3160 to amend the Railroad Retirement Act to provide that an individual shall be deemed to have been an employee on the enactment date, and entitled to an annuity, if prior to such date he had attained the age of 65 years and rendered 30 years or more of service to one or more employer subject to the act.

Unions to Seek Changes in New Eastern Pass Rules

Railway labor organizations have received so many complaints about the new pass regulations which Eastern railroads put into effect on January 1 that the Railway Labor Executives' Association, at its Washington, D. C., meeting last week, decided to appoint a committee headed by Executive Secretary J. G. Luhrs to discuss the matter with J. J. Pelley, president of the Association of American Railroads. The new Eastern pass regulations were outlined in the *Railway Age* of November 11, 1939, page 764; among other things they abolished the complimentary annual pass and "commutation" passes by foreign lines and drastically curtailed foreign-line trip passes.

Among other complaints the labor leaders have heard that the limitation on foreign passes may force a curtailment of some of the work the unions have been doing in cooperation with management—the necessary travel in connection with such work will prove too expensive for employee representatives unless the rules are changed, it is said. S.2009, the general

transportation bill, now before a conference committee of the Senate and House, amends the Interstate Commerce Act's section on free transportation so as to permit the issuance of passes to executive officers, general chairmen, and counsel of employee organizations.

Freight Car Loading

Revenue freight car loadings for the week ended January 20 totaled 645,822 cars, the Association of American Railroads announced on January 25. This was a decrease of 21,891 cars, or 3.3 per cent, below the preceding week, but an increase of 59,166 cars, or 10.1 per cent, above the corresponding week last year, and an increase of 75,589 cars, or 13.3 per cent, above the comparable 1938 week.

As reported in last week's issue, the revenue freight car loadings for the week ended January 13 totaled 667,713 cars, and the summary for that week, as compiled by the Car Service Division, A.A.R., follows:

Revenue Freight Car Loadings			
For Week Ended Saturday, January 13, 1940			
Districts	1940	1939	1938
Eastern	149,884	131,686	122,114
Allegheny	141,458	111,441	102,664
Pocahontas	46,371	38,848	40,160
Southern	101,992	91,459	92,755
Northwestern ..	80,313	70,289	72,668
Central Western ..	98,946	94,405	100,387
Southwestern ..	48,749	44,116	49,992
Total Western Districts	228,008	208,810	223,047
Total All Roads	667,713	582,244	580,740
Commodities			
Grain and grain products	31,872	33,931	42,393
Live stock	14,220	13,152	15,219
Coal	164,463	119,792	131,757
Coke	12,692	6,968	6,866
Forest products ..	30,102	26,423	25,878
Ore	9,332	7,849	7,772
Merchandise l.c.l.	144,110	145,166	141,252
Miscellaneous....	260,922	228,963	209,603
January 13	667,713	582,244	580,740
January 6	592,392	529,371	552,568
December 30 ..	550,270	499,455	
December 23 ..	654,817	574,198	
December 16 ..	681,166	606,003	
Cumulative Total, 2 Weeks	1,260,105	1,111,615	1,133,308

In Canada.—In the January 13 week loadings totaled 46,575, as compared to 40,510 in the comparable week last year and 38,858 in the January 6 week this year, according to the summary by the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Jan. 13, 1940	46,575	24,425
Jan. 6, 1940	38,858	21,300
Dec. 30, 1939	36,866	22,557
Jan. 14, 1939	40,510	21,575
Cumulative Totals for Canada:		
Jan. 13, 1940	85,433	45,725
Jan. 14, 1939	76,239	41,123
Jan. 15, 1938	89,415	42,653

Ocean-Rail Rates via Texas and Louisiana Ports

The Interstate Commerce Commission has found unreasonable and unduly prejudicial combination ocean-rail, rail-ocean, and rail-ocean-rail rates on class and commodity traffic between points in Eastern seaboard territory and points in the Southwest by way of Corpus Christi, Tex., Beaumont, and Lake Charles, La. The decision, written by Commissioner Porter, prescribed reasonable and nonprejudicial rates for the future, undertaking in that connection to

fix the basis for an adjustment through Lake Charles, Beaumont and Corpus Christi "which will, as nearly as may be, fit into that now maintained through New Orleans, Galveston and Houston."

The decision adds the stipulation that the findings are without prejudice to what may be done in the reopened portion of Consolidated Southwestern Cases having to do with ocean-rail rates. The case was docketed as No. 28023, Bull Steamship Line, et al. v. Abilene & Southern Railway Company, et al.

October Accident Statistics

The Interstate Commerce Commission's completed statistics of steam railway accidents for the month of October, 1939, now in preparation for the printer, will show:

Item	Month of October		10 mos. ended with October	
	1939	1938	1939	1938
Number of train accidents	694	532	4,922	4,697
Number of casualties in train, train-service and non-train accidents:				
Trespassers:				
Killed	214	220	2,021	2,014
Injured	187	191	2,030	2,150
Passengers on trains:				
(a) In train accidents*				
Killed	2	..	13	52
Injured	54	18	640	378
(b) In train-service accidents				
Killed	2	..	10	13
Injured	135	133	1,404	1,521
Travelers not on trains:				
Killed	1	2	9	8
Injured	78	55	671	605
Employees on duty:				
Killed	48	41	412	399
Injured	1,608	1,418	13,837	13,219
All other non-trespassers:**				
Killed	152	163	1,199	1,266
Injured	552	521	4,302	4,425
Total—All classes of persons:				
Killed	419	426	3,664	3,752
Injured	2,614	2,336	22,884	22,298

* Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former cause damage of more than \$150 to railway property.

**Casualties to "Other non-trespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties for all classes of persons, including both trespassers and non-trespassers, were as follows:

Number of accidents	457	329	2,631	2,669
Persons:				
Killed	137	150	1,097	1,159
Injured	387	375	3,020	3,081

Seek to Enjoin Order for Petroleum Rates

A hearing on the petition of the Chicago, Milwaukee, St. Paul & Pacific, the Northern Pacific, the Spokane, Portland & Seattle and the Union Pacific, which seeks to enjoin the enforcement of an Interstate Commerce Commission order fixing petroleum rates from tidewater to Spokane, Wash., was held before a three judge federal court at Portland, Ore., on January 17. The railroads had previously sought to reduce the rate from 41 cents to 25 cents a hundred on shipments from tidewater to Spokane, with similar reductions to other interior points to meet truck competition. The Commission ruled against the proposed reduction, but gave the railroads the option of establishing a rate of 28½ cents to Spokane, with corresponding rates to other destinations. At the hearing, William Adams, attorney for the truck and barge

operators and the Inland Waterways Association, charged that the railroads are trying to eliminate water and truck competition.

Condemns Rates After Suspended Tariff Expired

The Interstate Commerce Commission, Division 3, has found not justified proposed reduced all-rail reshipping and local export rates on whole grain, in carloads, from Chicago and Peoria, Ill., Milwaukee, Wisc., St. Louis, Mo., and related and intermediate points, to American North Atlantic ports, and from the Twin Cities, Minn., and Duluth, and related points, via Sault Ste. Marie, Mich., to Canadian and American North Atlantic ports. Because the suspended schedules carried an expiration date of last November 30, the decision merely orders the proceeding (I. & S. No. 4653) discontinued.

The majority report was written by Commissioner Patterson, while Commissioner Mahaffie filed a brief concurring expression. It seemed to the latter quite unnecessary to find that the suspended schedules would be unlawful—if they had not expired; he would have based the order discontinuing the investigation on the fact that the proceeding had become moot.

Retirement Payments Total Quarter Billion

Over a quarter of a billion dollars had been paid out under the Railroad Retirement Act by the end of December, 1939, according to the Railroad Retirement Board. Certifications to the Secretary of the Treasury for payment on retirement and survivor benefits totaled \$250,250,000 from the beginning of operation through December; in the last six months of 1939 payments amounted to \$55,809,524, as compared with \$54,526,649 in the first six months of the year and \$52,314,982 in the last six months of 1938.

Payments under the employee annuity provisions of the act amounted to \$167,759,000, or 67 per cent of total payments, and payments on pensions to former private pensioners of the railroads were \$76,982,000, or 30.8 per cent. Payments to survivors of deceased annuitants who had made joint and survivor elections totaled \$1,623,000, or 0.6 per cent of the total. Death benefit annuity payments under the 1935 act amounted to \$1,669,000, or 0.7 per cent. Four per cent lump-sum death benefits payable under the 1937 act amounted to \$2,216,000, or 0.9 per cent of total payments.

Orvis Testimony Placed in Congressional Record

Representative Coffee, Democrat of Washington, inserted in the appendix of the Congressional Record of January 18, a letter from Eugene L. Orvis, a traffic consultant of Jersey City, N. J., addressed to all the country's railroad executives which calls their attention to the testimony which he presented before the Monopoly Committee on October 5, 1939, which, in the words of the Washington congressman, "exposed relations between the railroads of the Southeast and 13 major oil companies which undeniable fall into the category of

conspiracy in restraint of trade." Mr. Orvis' testimony was reviewed in the *Railway Age* for October 14, 1939, page 602.

Mr. Coffee went on to assert that the testimony "also appears to disclose that major oil companies combine in intimidating and coercing the railroads and further tends to show that certain common-carrier pipe lines openly and flagrantly violate the commerce laws."

"It seems to me," he concluded, "that before this Congress enacts any railroad legislation that railroad management should itself first take adequate measures to relieve itself of the burdens placed on the railroads by such unfair and illegal practices as are disclosed in this letter."

Tolls for New York Barge Canal?

State Senator W. W. Stokes and Assemblyman L. J. Shaver have introduced a concurrent resolution in the New York legislature proposing an amendment to article 15 of the state constitution which would eliminate its present prohibition against the imposition of tolls for use of the 525-mile tax-supported canal system of the state, which has been toll-free since 1883. The sponsors of the amendment have contended that less than 8 per cent of the total traffic passing through the canal originates in New York and that more than 33 per cent both originated in, and is destined for, points outside its borders. The legislators, both of whom represent counties through which the waterway passes, issued a joint statement as follows: "When we are taxing everything—even to a penny for the privilege of smoking ten cigarettes—it seems unfair to continue this burden of expense on the people to maintain the free waterway, the cost of which aggregates approximately \$10,000,000 annually for maintenance, upkeep and amortization charges."

Traffic over the canal system totaled 4,533,540 tons during open navigation from April 24 to November 18, 1939, as compared with 4,406,766 tons during the 1938 season. Petroleum and oil products, the largest single class of traffic making use of the waterway, totaled 2,041,069 tons during 1939.

Retirement Board Hearing on Forwarders

A joint hearing has been authorized by the Railroad Retirement Board to determine the status under the Railroad Retirement and Railroad Unemployment Insurance Acts of the National Carloading Corporation, Universal Carloading and Distributing Company, Inc., and individuals who have been engaged in the performance of operations of those companies. The hearing will be held in Washington, D. C., on March 11, "or at any other time and place arranged for the convenience of the Board's Examiner and the interested parties."

Two issues to be considered are whether either carloading company has ever been directly or indirectly owned or controlled by, or under common control with, one or more express companies, sleeping car companies, or carriers by railroad covered by the acts, and whether either company ever operated any equipment or facility (other than casual operation) or performed any

service (other than trucking or casual service) in connection with the transportation of passengers or property by railroad, or the receipt, delivery, elevation, transfer-in-transit, refrigeration or icing, storage or handling of property transported by railroad, within the meaning of the acts. Also to be determined is whether any employer within the meaning of the acts ever supervised and directed or reserved the right to supervise and direct either company or the individuals engaged in the operations of those companies with respect to the manner of rendition of the work performed in such operations, within the meaning of the acts.

Advertising Agents Meet in Chicago

The annual meeting of the American Association of Railway Advertising Agents was held at the Union League Club, Chicago, on January 19 and 20. Among the subjects discussed were the value of silent versus sound and of black and white versus Kodochrome and Cine colored moving pictures for railroad advertising purposes, radio advertising, advertising contests, outdoor advertising, advertising budgets and children as potential travelers of tomorrow.

Addresses were made by John T. Kolbert of the San Francisco Golden Gate Exposition and by D. Alexander MacQueen and Frederick W. Olmstead of the New York World's Fair on the plans of the two expositions for 1940. George Kelly, vice-president of the Pullman Company, reviewed, with the aid of graphic charts, the advertising campaign which the Pullman Company has been carrying on for the past several years and described the advertising plans of the Pullman Company for 1940. James W. Switzer, passenger traffic manager of the New York Central at Chicago, was the guest speaker at the luncheon on the nineteenth.

Officers elected for the ensuing year are president, R. E. Israel, advertising agent of the Central of New Jersey; 1st vice-president, F. E. Heibel, advertising agent of the New York, Chicago & St. Louis; vice-presidents, R. W. Jennings, advertising agent of the Chicago, Burlington & Quincy; C. P. Moore, advertising agent of the Union Pacific; R. A. Willier, general advertising agent of the Wabash; R. F. Irwin, advertising agent of the Delaware, Lackawanna & Western; treasurer, E. A. Mitchell, advertising department, Atchison, Topeka & Santa Fe; and secretary, E. A. Abbott, of Poole Bros., Inc.

Vandenberg Calls Rivers and Harbors Bill an "Atrocity"

"In the new and contrite spirit of economy which seems to have taken possession of the Congress," Senator Vandenberg, Republican of Michigan, cannot imagine "favorable consideration of such an atrocity" as H. R. 6264, the pending rivers and harbors bill carrying authorizations for projects estimated to cost a total of \$407,000,000. The Senator made this observation as he asked that the bill be passed over when it was reached during the course of the call of the calendar in the Senate on January 18.

Mr. Vandenberg recalled how the measure passed the House at the last regular

session with authorizations totaling \$83,000,000; and how the Senate committee on commerce "added a little sum of \$324,000,000." He would have asked that the bill be recommitted to the committee on commerce except for the absence of the chairman of that committee—Senator Bailey, Democrat of North Carolina. Senator Sheppard, Democrat of Texas, a member of the committee, arose to defend the bill as one which has the approval of "a large majority" of that committee. He went on to explain that "it is an authorization bill, and would spread the expenditures over about eight years"; and that it "involves a long-time program, including some of the most important waterway and harbor projects in the United States." The Texan continued to suggest that with the improvement in waterways connecting the Great Lakes completed, Senator Vandenberg was now objecting "to similar projects in the rest of the country."

Mr. Vandenberg replied that the connecting channels on the Great Lakes had been in existence at least 50 years, and carried a third of all U. S. water-borne commerce; he added that whether or not, as Senator from Michigan, he had any interest in the bill directly he is opposed to adding \$324,000,000 to the House authorizations at the present time. A demand for the "regular order" closed the colloquy and the bill was passed over.

Meeting Itinerant-Truck Competition for Grain Traffic

Railroads serving specified areas in Iowa, Missouri, Kansas, Nebraska, Colorado, Wyoming and South Dakota have been authorized by the Interstate Commerce Commission to meet the competition of itinerant truckers with rate reductions on wheat, corn, oats and barley, and certain of their products. The permission comes in a second supplemental report on further hearing in No. 17000, Rate Structure Investigation, Part VII, Grain and Grain Products Within the Western District and for Export, the commission modifying the previous order requiring the application of common rates on wheat and coarse grains, and their products, throughout the Western district.

Discussing the need for the proposed rate cuts, which will reflect reductions of about 20 per cent, the commission notes that the only objections of record were to the effect that the reductions were not to be extended to additional areas. "In recent years," the report had previously said, "the competition of these (itinerant) truckers has become so intense that very little of the coarse-grain traffic between these areas is left to the rails. The maximum truck loading has increased about 300 bushels to approximately 800 bushels, or about half an average carload. . . . The itinerant truckers are not to be confused with the common or contract carriers by motor vehicle, subject to our regulation. The latter are not a factor in this movement. . . ."

"The price paid for coarse grains by the itinerant trucker at country origins ranges from one cent to five cents per bushel, and averages about three cents per bushel, higher than the price paid for shipments

by rail, which is basically the government market price minus the rail rate to the market. . . . The proposed rates reflect reductions . . . which would have the effect of about equalizing the truck and rail price.

"The applicant carriers do not predict a return of all of the coarse-grain traffic to the rails, as a result of their proposed revision, but they do expect to regain a substantial portion of it. In this connection they point to the competition among the itinerant truckers themselves at destinations, of an intensity even greater than at origins."

Port Plan Still Working O. K.

"Stimulated largely by war demands, export traffic through Atlantic and Gulf ports has materially increased compared with one year ago," said a January 23 statement from the Association of American Railroads.

"This increase in traffic," the statement continues, "is flowing freely and without congestion largely due to the plan set up last November by the railroads, in cooperation with shippers, exporters, steamship owners, and port authorities, to control the movement to the extent necessary to prevent congestion."

"At the port of New York east-bound tonnage lightered in the month of December, 1939, increased 68 per cent, compared with December, 1938, and 13 per cent compared with November, 1939, while at New Orleans, the volume of export traffic handled in December was approximately 39 per cent above the same month the preceding year. Movement of freight over the wharfs at New Orleans in December was the heaviest for any month in the past 12 years. The percentage increase that took place in New York in December compared with one year ago also is being reflected in Philadelphia and Baltimore, largely due to the heavier export movement of wheat."

"Reports received from the principal North Atlantic and Gulf ports by G. C. Randall, Manager of Port Traffic, show that since this plan was placed in effect early last November, the handling of this export freight at the various ports is being steadily expedited, and that at New York only about 40 per cent of the available storage facilities on railroad piers is now being used."

"In the first 20 days of January, cars lightered for export at the port of New York average 709 per day compared with 686 in December and 590 in November. These figures compare with approximately 1,250 cars lightered daily for export during the peak of the World War movement."

"In the face of an increase in the amount of export traffic, the number of railroad lighters at the port of New York held at steamship piers more than 48 hours before they can be unloaded has been reduced, since this plan went into effect, from an average of 160 to less than 100."

"Although exports of wheat and oats were negligible at New Orleans, those for corn totaled more than 2,000,000 bushels in December, 1939, an increase of approximately 9 per cent above the same month the preceding year. There also has been a stimulation in the movement of cotton through New Orleans, receipts at that point

since August 1, 1939, having been approximately 139 per cent above the same period one year ago, while cotton exports have increased 181 per cent."

B. & P. Case is Argued Before I. C. C.

Division 4 of the Interstate Commerce Commission heard oral argument on January 18 in the case of the reorganization of the Boston & Providence on exceptions to the recommended report of Examiner Wilkinson. Examiner Wilkinson has recommended the acquisition of the B. & P. by the New York, New Haven & Hartford on terms proposed by the latter.

Under the examiner's plan the reorganized company would issue and deliver to the B. & P. \$3,029,213 of new fixed interest bonds, \$1,467,520 of income bonds, and \$1,467,520 of new preferred stock. The New Haven's proposal also contemplates the waiving of the claims of its trustees or the Old Colony trustees against the B. & P. and claims of the B. & P. against the New Haven.

B. W. Warren, appearing on behalf of the B. & P., urged that the lease of the line by the New Haven be continued for 48 years (the period the rejected lease had to run) under modified terms. He insisted that the New Haven should not be permitted to acquire the property for the "low figure" proposed.

Howard W. Brown, representing the independent stockholders of the B. & P., also insisted that the figure at which the examiner suggested that the New Haven be permitted to acquire the line was too low. He asserted that it was erroneous to take the position that the B. & P. had no value, except as a part of the reorganized New Haven.

John C. Rice, appearing as counsel for the Provident Institution for Savings, took the position that the price suggested by the New Haven for the acquisition of the B. & P. was too low. Instead, he suggested that the commission undertake to fix a compromise price.

John L. Hall, counsel for the New Haven, told the commission that the value of the B. & P. to his road was determinable by what it would cost the New Haven to construct a line from Boston to Providence, which would be \$6,000,000.

Others who argued before the commission were: G. H. Fernald, Jr., counsel for the Boston & Albany, who represented the New York Central System as lessee of the B. & A.; Robert H. Hopkins, representing the city of Boston, Mass., and Charles W. Mulcahy, co-trustee of the Boston & Providence.

Atlantic States Shippers Oppose Senate L. c. l. Probe

Some 325 members of the Atlantic Shippers Advisory Board, meeting in Philadelphia, Pa., on January 17, voted unanimously that Senate Resolution No. 146, authorizing a committee investigation of railroad methods of handling forwarder, l.c.l. and express traffic, should be deferred. This resolution, copy of which was sent to the Senate Commerce Committee, was based on the following "whereases": (1) The merchandise committee of the Rail-

way Traffic Executives is currently studying I. C. I. rates and classification; (2) a railroad committee is now working on tariff simplification; (3) no final disposition has been made of the report of the I. C. C. report on forwarders [this presumably refers to pending litigation respecting the status of forwarders—Ed.]; (4) the I. C. C. has instituted a general investigation of rates east of the Rockies; (5) until the position of for-hire motor carriers in the transportation field is established, no solution of the merchandise traffic problem is possible; and, (6) regulation of the carloading and forwarding industry is proposed in S. 2009. The members also voted unanimously in favor of a resolution reaffirming previous opposition of the board to ratification of the St. Lawrence waterway treaty.

Commodity committees forecast an increase of 9.5 per cent in carloadings in the first quarter of 1940, as compared with that of 1939, while, due to a probable "tapering-off" of industrial activity as the year progresses, they foresee an increase for the entire year of 6.5 per cent over 1939. As compared with the last quarter of 1939, the first quarter of 1940 is expected to show a decrease of 4 per cent.

On January 16, the executive committee appointed a new L. C. I. Committee, headed by R. C. Huntington, traffic manager, Casey Jones, Inc., Baltimore, Md., to serve as a clearing house for discussion of I. C. I. problems beyond purely local road conditions, to negotiate with the carriers and to serve particularly the "small shipper who does not have a highly-trained traffic executive able to gain the attention of the higher transportation executives." It is hoped that the work of this new committee will attract to the board a new group of shippers who have not hitherto been touched by the board's activities.

R. B. A. Members and Executives Don't Like Subsidy Idea

Key railroad and railroad supply men are "fairly unanimous" in opposing a policy of public subsidies to the railroads to cover expenditures necessary to meet the demands of national defense. This fact is revealed in a recent letter sent by Harry A. Wheeler, president of the Railway Business Association, to those attending its recent annual dinner, wherein he points out that replies received from the latter to a proposal for national defense subsidies, while difficult to summarize in particular, show "a fairly unanimous dissent from the suggestion that a standby plant capacity such as would be required to fully meet the demands of national defense should be provided at public cost." The latter proposal was put forth by Mr. Wheeler in an address before the R. B. A. annual dinner on November 9 (reviewed in the *Railway Age* of November 18, 1939, page 796) and further elaborated in a printed statement sent to R. B. A. members and guests from the railroad industry for comment. In brief, Mr. Wheeler's argument was to the effect that while the public interest demands that the carriers meet the fullest demands of "commerce" on their own responsibility, the extra demands for stand-by plant as a military necessity is beyond the railroads'

obligation and should be met by public aid.

The chief objection to subsidy expressed by "those closest to the railroad picture" in their comments to Mr. Wheeler was that railroads must always maintain a surplus of facilities, equal to that demanded by the national defense, in order to meet the periodic abnormal demands of ordinary commercial traffic, anyway. Therefore they do not have any claim on the government to provide a subsidy merely in the interest of maintaining a surplus of transportation that might in the event of war be required for national defense. Other objections cited reflected a distaste generally for subsidy in any form, as being an improper use of public funds, and involving the possibility of close government supervision over, and interference with the management of, the subsidized industry.

Reflecting on the sentiments thus expressed, Mr. Wheeler, in his letter, declared: "When a great industry like rail transportation accepts its responsibility to serve, with its own resources, both national and private demands as they may arise, it offers to all other economic interests an example of very broad public service which, if emulated by all other forms of private enterprise, should solve any national emergency, and place upon the public a reciprocal obligation to free private enterprise from unequal competitive treatment, and from every restraint that might interfere with the carrying out of such a broad public policy."

National Resources Board Plans Transportation Study

A study designed to put together "a real transportation picture" in order to see "what is the most economical and effective way of moving people and goods from one place to another" is among the "major undertakings" now being inaugurated by the National Resources Planning Board "with the approval of the President." This was revealed in the recently-published testimony of Frederic A. Delano and Charles W. Eliot, respectively chairman and director of the Board, before the House appropriations committee's sub-committee which considered the independent offices appropriation bill for 1941.

No funds for the National Resources Planning Board were provided in the independent offices bill as reported by the committee and passed by the House, the committee having thus acted because of threats that a point of order would be raised on the floor on the basis of a contention that the agency had been set up without specific authorization from Congress.

In the tabulation of Resources-Board projects submitted by Mr. Delano, the transportation study is listed as one on which an estimated \$25,000 would be spent during the fiscal year ended next June 30; and on which it was proposed to spend another \$65,000 during fiscal 1941. Further, Mr. Delano listed the transportation study along with a study of national relief policy as "two major undertakings" on which the Board hopes to report "about a year from now." There also came Mr. Delano's reference to the fact that the studies were be-

ing inaugurated "with the approval of the President." Mr. Delano added that "for these projects we have not only the wholehearted cooperation of all federal agencies concerned but their enthusiastic interest and support."

Supplementing Mr. Delano's statement, Mr. Eliot said that either the relief or transport study "would take a large fund to do in the way in which I know the Congress would want them done." The transportation study, he went on, is one "on which very large sums have already been spent by agencies of the government" and which "we hope to be able to pull together and put in shape for the use of Congress and the Administration."

Representative Dirksen, Republican of Illinois, asked Mr. Eliot why a "more useful" study would not be made by the President's committee-of-six, or "men who are in the transportation field and who have given much time and much thought, on the basis of a varied background, to that whole matter."

"Our procedure," Mr. Eliot replied, "has been on all these studies to combine what is known in the federal government with the knowledge of experts from outside the government. President Gray's (the late Carl R. Gray, one of the management members of the committee-of-six) special committee, was concerned with the railroads and made a very great contribution to the study of that problem. But it is only one of some five or six angles that we must consider in order to get a real transportation picture. We must put them all together. We must have something on pipe lines, on aviation, on waterways, on highways; all put together to see what is the most economical and effective way of moving people and goods from one place to another. It is that combined problem which we hope to explore and to use all that President Gray's committee, and all these agencies have."

Swiss Expand Railroad Improvements Regardless of War

The Swiss Federal Railroads have announced increased expenditures for new rolling stock and line improvements for 1940 as compared with previous years. This is noteworthy in view of the European war situation, which has dealt a serious blow to Swiss trade and forced the republic to pay the mounting costs of a general mobilization. Included in roadway construction projects is the double-tracking of the Brunnen-Fluelen and Taverne-Lugano sections of the St. Gotthard line and the beginning of a connecting railroad in Geneva between the Cornavin and Eaux-Vives stations.

The 1940 appropriations for new rolling stock total \$2,200,000, or approximately \$55,000 more than the figure for last year. Up to the close of 1937, the cost of electrifying the entire state-owned system amounted to \$174,460,000.

Status of Electric Lines

The Interstate Commerce Commission, Division 3, has found that the Lorain Street Railroad Company, which discontinued operation of its nine-mile electric line between Lorain, Ohio, and Elyria in May,

Continued on next left-hand page

MODERN



POWER ♦ ♦

Typical of the new super-power that Lima is building to meet today's increasing traffic demands is the 2-8-8-4 Type Locomotive illustrated above. This group of 12 locomotives is being used by the Southern Pacific on high-speed freight and passenger runs in mountainous territory.

LIMA LOCOMOTIVE WORKS



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1938, did not as of August 29, 1935, or between that date and the time when operations were discontinued, fall within the exemption proviso of section 1 (a) of the Railroad Retirement Act and the Carriers Taxing Act. The proceeding (Electric Railway Docket No. 6) was instituted at the request of the Railroad Retirement Board and the Commissioner of Internal Revenue.

Examiner M. J. Walsh has recommended in a proposed report in Electric Railway Docket No. 11 a commission finding that the San Francisco & Napa Valley and its predecessor, the San Francisco, Napa & Calistoga, do not fall within exemption provisos of the two aforementioned acts nor that of the Railway Labor Act. This proceeding was instituted at the request of the National Mediation Board as well as the Retirement Board and the Commissioner of Internal Revenue.

Progress on St. Lawrence Project

The lengthy conferences between Canadian and United States officials on the proposed St. Lawrence treaty reached a stage on Wednesday this week enabling the conferees to issue the following statement:

"During the discussions the whole field was covered and definite progress was made. The discussions have now reached the point where it is necessary for the two delegations to report to their respective governments on various matters of policy requiring their consideration and decision.

"The engineering advisers of the two governments have reached substantial agreement on the feasibility and desirability of a project in the international rapids section of the St. Lawrence River, which would involve a main dam in the vicinity of Barnhart Island, with a power house in each country and a control dam upstream. This project is based upon a plan which was discussed in some detail in the 1926 report of the joint board of engineers.

"The engineers of the two countries are in agreement that such a project is sound from an engineering standpoint, cheaper in cost than the project on which the 1932 treaty was based, and affords full protection for all the interests in the various sections of the St. Lawrence River."

President Roosevelt favors the development of the St. Lawrence waterway and does not believe it will be harmful to either Buffalo, N. Y., the North Atlantic ports, or other transportation agencies. This fact was made known at the White House this week. It is also understood that the President is in favor of maintaining a 9-ft. water level in the Illinois waterway which would connect Lake Michigan with the Mississippi, but is opposed to diverting any more water than is specifically needed for this purpose. He is known to oppose the diversion of any water from Lake Michigan to help Chicago carry away its sewage, taking the position that that municipality should have sewage disposal plants to take care of all of its refuse.

Secretary of State Hull, on January 21, welcomed to Washington the Canadian delegation which has come to this country to work out the details of a new treaty for the development of the St. Lawrence waterway. The Secretary, in extending a welcome to the Canadian visitors, declared

that "In a world in which so much of international relations arise out of unhappiness it is gratifying to be able to take up a project which is constructive." Negotiations between the American and Canadian delegations are in progress, but no details have been revealed as this issue goes to press.

Meanwhile, representatives of a number of organizations which have been making studies of the beneficial and detrimental effects of the proposed waterway and power project met in Washington on January 17 and adopted resolutions opposing the project. Among the organizations represented at the meeting were:

Albany Port District Commission, American Mining Congress, American Short Line Railway Association, Association of American Railroads, Atlantic Deeper Waterways Association, Lake Carriers Association, Maritime Association of the Boston Chamber of Commerce, Maritime Association of the Port of New York, Mississippi Valley Association, National Coal Association, New York State Chamber of Commerce, New York State Waterways Association, Niagara Frontier Planning Board, Ohio Coal Association, Ohio State Chamber of Commerce, Railway Labor Executives Association, State Port Authority of Virginia, and the Chambers of Commerce of Cleveland, Buffalo, Baltimore, Boston, and numerous other cities.

At the same time that negotiations were going on at the State Department, members of Congress had their attention directed to alleged benefits to accrue from the treaty when Representative Culin, Republican of New York, told the House on January 22 that the project is the "soundest navigation and power project in the United States, if not in the world." "The project," he said, "is based on sound nationalism and tested economics." He went on to say that the seaway will convert more than 85 inland communities of the United States into seaports and listed them in the Congressional Record.

Meanwhile, Representative Martin J. Kennedy, Democrat of New York, who is the author of a resolution introduced last week asking for a congressional investigation of the project, has written a second letter to Secretary Hull, asking him to suspend negotiations pending the outcome of the investigation.

642 Killed in 1938 Motor Carrier Accidents

Accidents involving common and contract carrier motor vehicles subject to the Interstate Commerce Commission's jurisdiction brought death to 642 persons and injuries to 5,571 during 1938, according to an analysis of that year's accident reports just made public by the Bureau of Motor Carriers. This is the first of these reports to cover a full year, the previous one (reviewed in the *Railway Age* of December 31, 1938, page 965) having covered the nine months from April 1 to December 31, 1937.

A comparison of this 1937 period with the same nine months of 1938 shows that the latter had 29.3 per cent fewer fatalities and 18.5 per cent fewer injuries. Also, property damage resulting from the reportable accidents was down 14.7 per cent.

The motor vehicle accidents are reportable if they result in a fatality, or a personal injury requiring medical attention, or property damage of \$100 or more.

The above-mentioned 1938 fatalities and injuries resulted from 3,794 accidents, involving 3,953 motor vehicles of 1,236 reporting carriers; 113 of the accidents involved two interstate trucks, 26 one interstate truck and one interstate bus, and three involved three interstate trucks. Of the 642 fatalities, bus accidents accounted for 179, truck accidents 452, and the above-mentioned 26 bus-truck accidents accounted for 11. Buses were involved in 35 per cent of the 1938 accidents, 27.9 per cent of the fatalities, 55.4 per cent of the injuries and 17.9 per cent of the property damage. "The fact that the bus accidents reported appear disproportionately large," the analysis suggests, "may be due entirely to the nature of the industry since injuries of a minor nature occur more frequently in the transportation of passengers."

The Bureau's analysis of the information submitted has been extended since the previous report from 31 to 35 of the 61 specific classifications listed on the accident report form. Also, the bus and truck accident reports have been analyzed separately and have their separate tables in the report which has become a document of 134 mimeographed sheets. The distribution of bus accidents by types shows that none in 1938 was listed as having resulted from collision with a railroad train; there were 58 truck accidents of that type. Meanwhile there were 12 bus accidents at railroad crossings, involving collisions with motor vehicles or fixed objects. The commission's safety rules for buses requires them to stop at railroad crossings; but the Bureau says that further study of the matter is necessary before the reduction in bus collisions with trains should be credited to that "stop" rule. With respect to the poorer showing of the trucks in the matter of collisions with railroad trains the Bureau suggests that it may be due to the inherent nature of the operations involved. "It is a known fact," the report adds, "that trucks frequently operate at railroad terminals and require the frequent crossing of railroad tracks."

The summarization of items under which the greatest number of accidents occurred for 25 specific classifications shows, among other things, that December was the 1938 month of greatest frequency of both bus and truck accidents; Sunday the day of the week for bus accidents and Friday for truck accidents; and the hour of greatest frequency for bus accidents was 5 to 6 p. m., for truck accidents, 11 p. m. to midnight. Also, the greater number of both bus and truck accidents occurred on straightaway stretches in open country with road conditions "good," the weather "clear" and to vehicles with no apparent defects. Drivers on duty from two to three hours and out of bed from four to five hours were most frequently involved in the bus accidents while truck accidents occurred most frequently with drivers on duty five to six hours and drivers up from four to five hours. The speed at the time of the impact reported most frequently for bus accidents was 10 to 14 m.p.h.; for truck accidents 20 to 24 m.p.h.

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Equipment and Supplies

Burlington Orders More Zephyrs

The Chicago, Burlington & Quincy has placed an order with the Edward G. Budd Manufacturing Company for a tenth Zephyr—a five-car Diesel-electric streamlined train—which will be placed in operation next spring on a daily round trip schedule between Lincoln, Neb., and Kansas City, Mo., via Omaha, Neb. It will supplant the Pioneer Zephyr, which will be assigned elsewhere. This new train will consist of a 2,000-hp. Diesel-electric locomotive to be built by the Electro-Motive Corporation, a 72-ft. 8-in. combination mail and baggage car having a 30-ft. railway post office, a 72-ft. 8-in. baggage and express car, two deluxe chair cars of 52-passenger capacity and a diner-observation car with 24 dining seats and 22 parlor car chairs. Its name will be determined by a contest.

Later, Zephyrs eleven and twelve will be ordered for delivery in mid-year. These 8-car trains, to be known as the Texas Zephyrs, will operate between Denver, Colo., and Ft. Worth, Tex., and Dallas, on a schedule of 18 hr. southbound and 19 hr. northbound, or approximately 5 hr. faster than present schedules. The proposed schedule provides for departure from Denver at 1 p.m. and arrival at Ft. Worth at 7 a.m. and at Dallas at 8 a.m. Departure from Dallas will be 2 p.m. and from Ft. Worth 3 p.m., and arrival at Denver will be 8 a.m. Each train will include a 4,000-hp. Diesel-electric locomotive, a mail-express car, a baggage coach, two deluxe chair cars, a dining-lounge car (all of stainless steel) and three standard Pullmans.

LOCOMOTIVES

THE NORTHERN PACIFIC has ordered three Diesel-electric locomotives of 660-hp., from the American Locomotive Company.

THE CHILEAN STATE RAILWAYS have ordered from the American Locomotive Company 10 heavy Mountain type (4-8-2) locomotives of 5-ft. 6-in. gage to have 25-in. by 30-in. cylinders, 66-in. driving wheels and a total weight in working order of 329,000 lb.

FREIGHT CARS

THE LEHIGH VALLEY is building 24 caboose cars in its shops at Sayre, Pa.

THE GENERAL CHEMICAL COMPANY has ordered 75 tank cars of 9,800 gal. capacity, from the General American Transportation Corporation.

THE MINNEAPOLIS & ST. LOUIS has ordered 10 covered hopper cars from the General American Transportation Corporation.

PASSENGER CARS

THE NEW YORK CENTRAL contemplates buying a number of new passenger cars

and plans to rebuild some of its present cars.

IRON AND STEEL

THE SOUTHERN RAILWAY has placed an order for 4,000 tons of rail with the Bethlehem Steel Company.

Supply Trade

The D. J. Murray Manufacturing Company, Wausau, Wis., has dissolved the Unit Heater & Cooler Co., which it established in 1929 as the sales organization for its "Grid" unit heater and cooler, and has taken over its manufacture and sales.

George W. Plaisted, vice-president of the Austin Company, Cleveland, Ohio, in charge of West Coast operations for the past seven years, has been named vice-president and general sales manager of the company, with headquarters at Cleveland.

Sidney D. Williams, director of sales for the Timken Steel & Tube division of the Timken Roller Bearing Company, Canton, Ohio, has been appointed vice-president in charge of sales for the new Steel division at Warren, Ohio, of the Copeweld Steel Company, Glassport, Pa.

H. P. Crowell, for 40 years engaged in railway engineering and managerial activities, and J. W. Roberts, for a like term engaged in railway and general problem work, have formed the firm of Crowell-Roberts, engineers and accountants, 50 Broad Street, New York. The firm will specialize in railroad and allied problems.

R. A. Cannon, vice-president in charge of casting sales of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.,



R. A. Cannon

has been appointed vice-president in charge of sales. Mr. Cannon is now responsible for the entire sales activities of the company. He entered the service of the Birdsboro Steel Foundry & Machine Co. in 1921 and became vice-president in charge of casting sales in 1929. Mr. Cannon's new duties became effective on January 1.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment by the Gulf, Colorado & Santa Fe.*—Division 4 of the Interstate Commerce Commission, at the request of the Gulf, Colorado & Santa Fe, in Finance Docket No. 12628, has dismissed its application for authority to abandon a line extending from Peel Junction, Tex., to Montgomery.

ATCHISON, TOPEKA & SANTA FE.—*Abandonment by the Healdton & Santa Fe.*—The Healdton & Santa Fe and the Gulf, Colorado & Santa Fe, respectively, have been authorized by Division 4 of the Interstate Commerce Commission to abandon 1.2 miles of track and operation over it in Ardmore, Okla.

ATLANTIC COAST LINE.—*Bonds.*—Division 4 of the Interstate Commerce Commission, at this company's request, has dismissed its application for authority to procure the authentication and delivery of \$4,444,830 of its general unified mortgage 50-year series A 4½ per cent gold bonds.

BOSTON & MAINE.—*Plan of Exchange.*—This road announces that holders of more than \$30,000,000 of bonds have formally assented to the voluntary plan of exchange announced January 4, by depositing their securities. In addition, a group of individuals have agreed to deposit \$10,000,000 additional of bonds in the near future.

The plan, which was reviewed in the *Railway Age* of January 6, page 108, affects \$104,000,000 of bonds held by the public.

Holders of notes amounting to \$5,500,000 have agreed, it was announced on January 25, to take new first mortgage bonds of the road in satisfaction of notes they now hold. This action satisfies one of the major conditions in the plan of exchange laid down by the R. F. C. in agreeing to take \$40,750,000 of the B. & M.'s first mortgage bonds to satisfy the notes now held by that Corporation and to furnish \$26,000,000 in cash for those of the bondholders who elect to take cash.

BOSTON TERMINAL.—*Ratification of Trustees.*—John H. Moran, Henry R. Mayo and S. Lewis Barbour have asked the Interstate Commerce Commission to ratify their appointments as trustees of this company in reorganization proceedings under section 77 of the Bankruptcy Act.

CHESAPEAKE & OHIO.—*Abandonment.*—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon its so-called Brush Fork subdivision, extending from Brush Fork Junction, Ohio, to the end of the branch at New Pittsburg, 2.6 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Abandonment by the Chicago, Terre Haute & Southeastern.*—The Chicago, Terre Haute & Southeastern and the Chicago, Milwaukee, St. Paul & Pacific, respectively, have been authorized by Division 4 of the Interstate Commerce Commission to abandon the line and the operation of the line extending from Windsor Junction

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A modern 4-8-4 type locomotive equipped with a Type "A" superheater costs about \$150,000 and develops 4,000 hp.—at a cost of \$37.50 a horsepower.

The same locomotive equipped with a Type "E" superheater would develop approximately 800 additional horsepower. The cost for this additional horsepower would be approximately \$5 per horsepower . . . or about 1/7 of the cost of the original horsepower.

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January 27, 1940

tion, Ind., southeasterly 5.2 miles, all in Vigo County, Ind.

VENTURA COUNTY.—Abandonment.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon the following lines: (1) That part of its Round Mountain branch extending from the east side of Wood Road near Oxnard, Calif., to the beet dump at Petit, 1.4 miles of line and 0.07 mile of sidings, and (2) that part of its Round Mountain branch extending from station 0 plus 00 at the north side of Etting Road, Calif., on the De Bo branch south to the beet dump at station 56 plus 64 on the north side of Hueneme Road at De Bo, 1.1 miles.

CHICAGO, ROCK ISLAND & PACIFIC.—Sale of Trustee Certificates.—A total of \$20,400,000 of 2½ per cent trustees certificates of indebtedness of the Chicago, Rock Island & Pacific were sold to a banking group on January 23 at \$100.8152942, the group consisting of Solomon Brothers & Hutzler, Dick & Merle-Smith and Stroud & Co., Inc. The funds realized from the sale of these securities which mature on October 1, 1947, will be used to refund the outstanding trustees certificates of indebtedness issued under the indenture of July 1, 1937. The new securities were sold subject to the approval of the Interstate Commerce Commission and the district court.

KANSAS CITY SOUTHERN.—Equipment Trust Certificates.—This road has asked the Interstate Commerce Commission to modify previous orders in Finance Docket No. 11412 so as to permit the sale of an additional \$1,278,000 of its three per cent equipment trust certificates, Series F, now held by the Bankers Trust Company, New York, as trustee under the applicant's first mortgage. For the certificates, which would mature \$213,000 each January 1 from 1947 to 1952, it is proposed to accept 105-per-cent-of-par-and-accrued-interest bid of Salomon Bros. & Hutzler, the highest of five bidders.

MISSOURI SOUTHERN.—Abandonment.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon a part of its so-called Current River branch extending from Hobart, Mo., to Himont, 10.4 miles.

NEW YORK CENTRAL.—Lease.—The Peoria & Eastern and the Cleveland, Cincinnati, Chicago & St. Louis have asked the Interstate Commerce Commission for authority to continue in perpetuity the extension of its line over that of the other in Indianapolis, Ind., under a trackage agreement for joint use; and the New York Central has asked authority to continue operation thereover under its lease of the railway and property of the Big Four and the contract of the latter to operate the Peoria & Eastern, assumed by the N. Y. C. in connection with the lease.

NORFOLK SOUTHERN.—Abandonment of Operation.—This company has asked the Interstate Commerce Commission for authority to abandon operation over the tracks of the Norfolk Terminal and the

use of the station, sheds and other passenger train facilities of the terminal company in Norfolk, Va., 0.4 mile. The petition states that the tracks would not be taken up but will continue to be used by the Norfolk & Western and the Virginian.

PADUCAH & ILLINOIS.—Dismissal of Petition.—Division 4 of the Interstate Commerce Commission, at this company's request, in Finance Docket No. 12604, has dismissed its application for authority to operate under trackage rights in McCracken County, Ky.

READING.—Abandonment by the Gettysburg & Harrisburg.—The Gettysburg & Harrisburg and the Reading, respectively, have asked the Interstate Commerce Commission for authority to abandon that portion of the Hunters Run Branch and its operation, which extends from Pine Grove Furnace, Pa., to Gardners Farm, 5.5 miles.

READING.—Stock of Chestnut Hill.—This road has applied to the Interstate Commerce Commission for authority to purchase 130 additional shares of the capital stock of the Chestnut Hill, which it operates under a 999-year lease. The additional stock which it is proposed to acquire from H. E. Paisley for \$56.50 a share would increase the Reading's holdings from 49.86 per cent to more than 50 per cent.

TENNESSEE.—Notes and Construction.—This company has asked the Interstate Commerce Commission for authority to issue \$40,000 of three-year five per cent promissory notes. At the same time the company requested authority to construct a branch line from its existing branch line up Beech Fork of New River, Tenn., to a new coal mining development, three miles. The proceeds of the notes will be used in part payment of the cost of the construction of the line.

TENNESSEE CENTRAL.—Equipment Trust Certificates and R. F. C. Financing.—This company has been authorized by Division 4 of the Interstate Commerce Commission to assume liability for \$185,000 of 2¾ per cent equipment trust certificates, maturing in semi-annual installments of \$10,000 each from July 1, 1940, to July 1, 1942, inclusive, and of \$9,000 from January 1, 1943, to January 1, 1950, inclusive. At the same time Division 4 approved the purchase of the certificates by the Reconstruction Finance Corporation for its own use at a price not in excess of par and accrued dividends.

Average Prices of Stocks and Bonds

	Jan. 23	Last week	Last year
Average price of 20 representative railway stocks...	31.20	31.28	29.46
Average price of 20 representative railway bonds...	58.75	58.37	60.79

Dividends Declared

Dover & Rockaway.—\$3.00, payable April 1 to holders of record March 30.
 Erie & Kalamazoo.—Irregular, \$1.38, payable February 1 to holders of record January 26.
 Louisville & Nashville.—\$1.25, payable February 28 to holders of record January 30.
 Pullman.—25¢, payable March 15 to holders of record February 23.
 Wheeling & Lake Erie.—Prior Lien, \$1.00, quarterly; Convertible Preferred, \$1.38, quarterly, both payable February 1 to holders of record January 29.

Railway Officers

EXECUTIVE

S. A. Cisler has been appointed assistant to the president of the Kansas City Southern and the Louisiana & Arkansas, a newly created position, with headquarters at Kansas City, Mo.

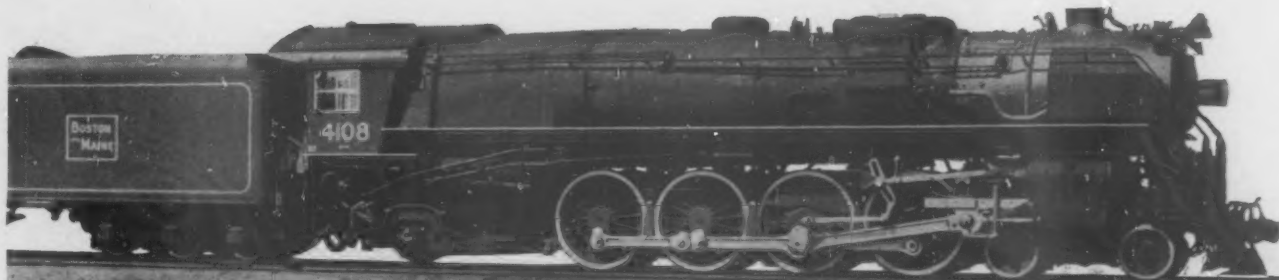
Gustav Metzman, manager of freight transportation of the New York Central system, with headquarters at New York, has been appointed assistant vice-president, with headquarters at Chicago, and **C. L. Jellinghaus**, assistant to the president, has been appointed manager of freight transportation, with headquarters as before at New York, succeeding Mr. Metzman. **F. F. Riefel**, assistant vice-president, with headquarters at Chicago, has been promoted to vice-president and general manager, with headquarters at Cleveland, Ohio.

Edward W. Scheer, president, Central of New Jersey and the Reading, has been appointed chief executive officer of the trustees of the former road, **Shelton Pitney** and **Walter P. Gardner**, who have recently been qualified by the Interstate Commerce Commission, as noted in the *Railway Age* of January 13. A statement of the trustees' office reads: "The present personnel of the company, so far as required to run, manage and operate, and to keep in proper condition and repair the railroad and properties of the debtor; and to manage, operate, and conduct its business, are retained by the trustees, subject to the right to make such changes as the trustees may at any time determine to be desirable."

Benjamin S. Atkinson, senior vice-president of the Louisiana & Arkansas, with headquarters at Shreveport, La., has retired. Mr. Atkinson was born at Tuscaloosa, Ala., on May 30, 1870, and entered railway service in 1889 as a telegraph operator on the Vicksburg, Shreveport & Pacific (now the Yazoo & Mississippi Valley, a part of the Illinois Central system). He later served as clerk and agent at various locations on this road, and in 1891, he went with the Minden Railroad (now part of the L. & A.) as agent and auditor. He returned to the Vicksburg, Shreveport & Pacific a year later as cashier in a local freight office, and in 1895 he was appointed agent at Ruston, La. Three years later he went with the Arkansas, Louisiana & Southern (now part of the L. & A.) as auditor and traffic manager, with headquarters at Minden, La., and in May, 1900, he was appointed agent for the Louisiana & Arkansas at Minden. In October, 1900, he became chief clerk to the superintendent at Stamps, Ark., and in February, 1901, he was appointed assistant general freight and passenger agent and purchasing agent at Stamps. Mr. Atkinson was further promoted three months later to general freight and passenger agent and purchasing agent, with the same headquarters, and in 1916 he was advanced to traffic man-

Continued on next left-hand page

On RIGHT-OF-WAYS, HIGHWAYS and AIRWAYS... } **B&M CUTS COSTS**



...with **NICKEL** alloy steels

New England thrift is reflected by this 4-8-2 built for the Boston & Maine by Baldwin Locomotive Works. Boiler shell and wrapper sheet of Nickel alloy steel permit use of economical high pressure steam for heavy freight service.

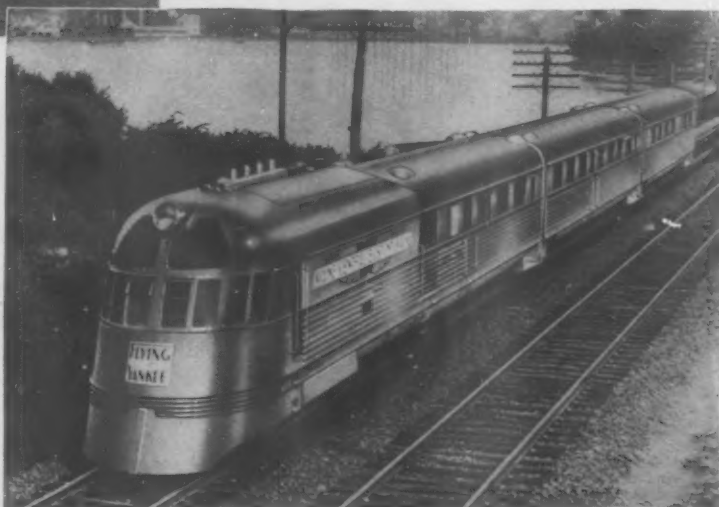


Cooperating with the Maine Central Railroad and the Central Vermont Railway, the Boston & Maine provides this high speed air transportation. From propeller hub to tail wheel, this Lockheed plane is made stronger and more dependable by liberal use of Nickel alloy steels.

Cooperating with the Maine Central, the B&M's Flying Yankee is daily proof that operating revenues can be built up by utilizing modern equipment. Equipment that costs less per mile because it is designed to make full use of the heightened abilities of Nickel cast irons and Nickel alloy steels. When you are ordering new units, or normal replacements, you can save safely by specifying alloys containing Nickel.



Buses are used as feeders, and in substitution for rail service on the B&M. Here on the highway, too, operating economies are made possible by high strength/low weight ratio of modern equipment—fortified by the increased properties of metals alloyed with Nickel.



THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

ager and purchasing agent, with headquarters at Texarkana, Ark. During the period of government administration of the railroads, he served as general freight and passenger agent for the L. & A. at Texarkana, and in 1920 he was re-appointed traffic manager. In 1928, Mr. Atkinson was elected senior vice-president in charge of all departments of the L. & A.

Herbert W. Bondurant, freight traffic manager of the Southern, with headquarters at Cincinnati, Ohio, has been appointed assistant vice-president, with head-



Herbert W. Bondurant

quarters at Washington, D. C., effective February 1. He will have charge of system freight sales and traffic service matters. Mr. Bondurant, a native of Tennessee, entered the service of the Southern at Nashville, Tenn., in 1912, and advanced through various capacities at Philadelphia, Pa.; Memphis and Nashville, Tenn.; Little Rock, Ark., and Dallas, Tex. Eventually he was appointed division freight agent at Charlotte, N. C., and still later he became assistant freight traffic manager at the same point. For three years he served as assistant freight traffic manager at Atlanta, Ga. In February, 1938, Mr. Bondurant was appointed freight traffic manager, with headquarters at Cincinnati.

OPERATING

N. A. Link, assistant superintendent on the Canadian Pacific, with headquarters at Wilkie, Sask., has been transferred to Ravelstoke, B. C., relieving **A. A. Smith**, who has retired.

A. J. Lomas, assistant superintendent, Capreol division, Canadian National, has been appointed superintendent of same division with headquarters as before at Capreol, Ont.

John P. Kiley, engineering assistant in the office of the chief financial officer of the Chicago, Milwaukee, St. Paul & Pacific, has been appointed special representative of the chief operating officer, with headquarters as before at Chicago.

T. K. Williams, assistant superintendent on the Illinois Central, with headquarters at Water Valley, Miss., has been promoted to superintendent at that point, succeeding **Albert D. Caulfield**, whose

death on January 14 was announced in the *Railway Age* of January 20.

J. A. Quick, superintendent of the Pacific Great Eastern, with headquarters at Squamish, B. C., has been appointed acting general manager, with headquarters at Vancouver, B. C., succeeding **Robert Wilson**, deceased.

TRAFFIC

Ralph H. Morris, assistant freight traffic manager of the Southern, with headquarters at Louisville, Ky., will retire, effective February 1.

Goodrich K. Murphy, assistant to the passenger traffic manager of the New York, New Haven and Hartford, has been appointed assistant passenger traffic manager in charge of passenger sales and development, with headquarters at New York City.

J. G. Morrison, freight traffic manager of the Northern Pacific, has been appointed, effective February 1, general freight traffic manager in charge of rates and divisions, a newly created position, with headquarters as before at St. Paul, Minn., and **W. H. Millard**, eastern freight traffic manager, with headquarters at New York, has been promoted to freight traffic manager in charge of solicitation east of the Pacific coast territory, with headquarters in St. Paul.

W. C. Stotler, assistant general passenger agent on the Baltimore & Ohio and the Alton at Chicago, has been promoted, effective February 1, to general passenger agent, with headquarters at Pittsburgh, Pa., replacing **J. P. DeVaughn**, whose death on December 26 was announced in the *Railway Age* of January 6. **William E. Meuse**, assistant general passenger agent on the B. & O. and the Alton at Chicago, will succeed Mr. Stotler as assistant general passenger agent in charge of solicitation at that point.

OBITUARY

Parker C. Newbegin, chief engineer of the Bangor & Aroostook, with headquarters at Houlton, Me., died on January 22, at the age of 70 years.

Emil L. Mackenroth, assistant superintendent of telegraph for the Northern Pacific, died in a Tacoma, Wash., hospital on January 16 at the age of 65.

A. W. Blume, general storekeeper of the St. Louis-San Francisco, with headquarters at Springfield, Mo., died of injuries received in an automobile accident near Joplin, Mo., on January 19.

W. S. Reeder, trainmaster on the Chicago & Eastern Illinois, with headquarters at Salem, Ill., died on January 21, from injuries received that day in an automobile accident a few miles west of Salem.

James T. Colbert, general superintendent of the Pittsburg & Shawmut, at Kittanning, Pa., died at Pittsburgh, Pa., on January 17, at the age of 69.

Mr. Colbert was born in Hornell, N. Y.,

March 4, 1870. He entered the service of the Erie in 1885, and was employed in various capacities in station, train and yard services until 1903, when he entered the service of the Pittsburg, Shawmut & Northern as assistant yardmaster. He served successively with that road as yardmaster, assistant trainmaster, chief clerk to superintendent, chief clerk to general superintendent, and superintendent car service. He entered the service of the Pittsburg & Shawmut on August 1, 1916 as superintendent, with headquarters at Kittanning, Pa., and was promoted to general superintendent, May 1, 1917, the position he held at the time of his death.

C. E. Olp, superintendent of the Syracuse division of the New York Central System, died on January 14. Mr. Olp was born at Mt. Morris, N. Y., on April 5, 1875, and entered the service of the New York Central on July 28, 1893, as a signal inspector on the Western division. On October 1, 1904, he was appointed chief signalman on the Buffalo division, being transferred in the same capacity to the Syracuse division on December 1, 1908. On March 18, 1912, he was appointed acting trainmaster of the Syracuse division and was promoted to trainmaster of the same division on October 1, 1912, the position he held until April 22, 1922, when he was appointed superintendent of the Syracuse division. From January 1, 1927, to February 1, 1930, he was superintendent of the Ontario division, and from February 1, 1930, to November 1, 1939, he was again superintendent of the Syracuse division. On November 1, 1939, he was granted a leave of absence because of illness.

William C. Cushing, formerly engineer of standards of the Pennsylvania, whose death on January 12, at his home at Germantown, Pa., was announced in the *Railway Age* of January 20, was born on March 18, 1863, at St. John, N. B., and was educated at the University of New Brunswick and at Massachusetts Institute of Technology. He first entered railway service in 1887, as a rodman on the engineering corps of the Jeffersonville, Madison & Indianapolis (now part of the Pennsylvania). Two years later he became engineer maintenance of way on the Cincinnati & Muskingum Valley (now also part of the Pennsylvania), being appointed division engineer on the Pennsylvania in 1890. In January, 1901, he was promoted to superintendent, serving successively in this capacity on the Panhandle and Eastern divisions. In 1903, he was promoted to chief engineer maintenance of way of the Southwest System, which position he held until 1918, when he took over the same position on the Lines West of Pittsburgh. His appointment as engineer of standards came in 1920. In this position, which he held at the time of his retirement, he was attached to the staff of the chief engineer, with jurisdiction over the standardization of practices and methods in the maintenance of track and roadway structures. Mr. Cushing was a charter member of the American Railway Engineering Association and for many years was active in the affairs of this association, serving as president in 1911-12.